

Market Drayton
Neighbourhood Development Plan
2016-2026

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Habitats Regulations Assessment

Screening Report

May 2018

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1. Introduction

It is a legal requirement for Local Authorities to prepare a Habitats Regulations Assessment (HRA) for plans and projects which have the potential to impact on habitats of European importance. This document undertakes a Habitats Regulations Assessment (HRA) of the Market Drayton Neighbourhood Development Plan 2016-2026 (MDNDP). It has been completed by Shropshire Council on behalf of the Market Drayton Neighbourhood Plan Steering Group.

The purpose of this Screening Report is to identify which international sites could possibly be affected by the proposals in the MDNDP, the potential pathways by which the sites may be affected and, where possible, to detail avoidance or mitigation measures to be applied in allocating sites or drafting the wording of any policies.

The MDNDP is not directly connected with or necessary to the management of an international site [Conservation of Habitats and Species Regulations 2017, 63 (1) (b)] and so is not exempt from HRA on this basis.

A copy of the MDNDP and this HRA Screening Report are available on the Market Drayton Town Council website under Neighbourhood Plan.

1.1 What are Habitats Regulations Assessments?

Habitats Regulations Assessment (HRA) (required under the Conservation of Habitats and Species Regulations 2017 or the 'Habitats Regulations') plays an important role in protecting the conservation objectives of the Natura 2000 network of sites. These sites, often referred to as 'European Sites', include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Candidate SACs (cSACs). Following UK government policy, potential SPAs (pSPAs), possible SACs (pSACs) and proposed and listed Wetlands of International Importance (Ramsar Sites) designated under the Ramsar Convention are also treated as though covered by the Habitats Regulations. The term 'international sites' includes all the above designations and is used throughout this report.

The purpose of a HRA is to ensure that the proposals of any plan or project, or the cumulative effect of a number of plans or projects, will not adversely affect the integrity of any international site.

The 'integrity' of the site is defined in ODPM Circular 06/2005: (Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System) as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or levels of populations of species for which it was classified".

European guidance (EU 2001) describes a four-stage process to HRA and is summarised below:

Stage 1: Screening

The process to identify the likely impacts of a policy or proposal upon a Natura 2000 site, either alone or in combination with other plans and projects, and consider whether the impacts are likely to be **significant** or uncertainty exists. Previously, case law suggested straightforward counter-acting measures could be recommended for incorporation into policy wordings and then sites re-screened. However, recent case law (*People Over Wind v Coillte Teoranta C-323/17*) has indicated that this may not be acceptable and if mitigation measures are required, HRA screening should proceed immediately to Stage 2.

Stage 2: Appropriate assessment

Consideration of impacts on the **integrity** of the Natura 2000 sites, either alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to determine adverse effect on the integrity of the site. If these mitigation options cannot avoid adverse effects then proceed to stage 3.

Stage 3: Assessment of alternative solutions

Examining alternative ways of achieving the objectives of the policy or proposal to establish whether there are solutions that would avoid or have a lesser effect on Natura 2000 sites.

Stage 4: Assessment where no alternative solutions remain and where adverse impacts remain:

This is the assessment where no alternative solution exists and where adverse impacts remain. The process to assess whether the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, the potential compensatory measures needed to maintain the overall coherence of the site or integrity of the European site network

1.2 Background to the Market Drayton Neighbourhood Development Plan 2016-2026 and the HRA Screening Report

The draft MDNDP has been prepared under the guidance of the Market Drayton Neighbourhood Plan Steering Group following the adoption of the Shropshire Local Plan. The Local Plan comprises the Core Strategy adopted in March 2011 and the Site Allocations and Management of Development (SAMDev) Plan adopted in December 2015, both by Shropshire Council. Policies and proposals within the MDNDP are set out in this HRA document prefixed by 'S.M' These will become part of the Development Plan guiding what might receive planning permission as well as indicating what further measures are necessary to guide new development.

Market Drayton Neighbourhood Development Plan must be consistent with both Shropshire Core Strategy (Policies prefixed by CS) and Shropshire SAMDEV Plan (Policies prefixed by MD where they refer to development management and S where they refer to settlements), and comply where relevant, with their policies and proposals.

This HRA Initial Screening Report should be read in conjunction with the Shropshire Core Strategy Development Plan Document: Habitats Regulations Assessment, Screening Report (March 2009), the Core Strategy Development Plan Document: Habitats Regulations Assessment, Stage 2 Report (February 2010) and the Shropshire Site Allocation and Management of Development Plan Habitats Regulations Assessment (July 2014). These HRA Reports identified international sites in and around Shropshire (together with their designated features and conservation objectives), which could potentially be impacted by proposed plans or projects in the County.

A partial review of the Local Plan is now in progress and will allocate additional sites for housing and employment for 2026 to 2036. It should be noted that the LPR is at an early stage of preparation. More specific information regarding location of site allocations and wording of policies is likely to be available later in the plan making process and will form the basis for subsequent LPR HRA reports. The sites allocated in the final MDNDP will be taken into account in the Shropshire Local Plan Review.

2. Methodology

2.1 Purpose of the HRA Screening Report

This Screening Report seeks to:

- identify which international sites could possibly be affected by the proposals in the MDNDP,
- identify the potential pathways by which the sites may be affected,
- Identify all aspects of the MDNDP which would have **no effect** on an international site, so that that they can be eliminated from further consideration in respect of this and other plans;
- identify all aspects of the MDNDP which would **not be likely to have a significant effect** on an international site (i.e. would have some effect, but minor residual), either alone or in combination with other aspects of the same plan or other plans or projects, which therefore do not require 'appropriate assessment';
- identify those aspects of the MDNDP where it is not possible to rule out the risk of significant effects on an international site, either alone or in combination with other plans or projects, and which would require Appropriate Assessment, and
- where necessary, undertake further research and complete an Appropriate Assessment, signposting sites which will be particularly sensitive to development and giving recommendations for any counteracting measures required to avoid adverse effects on international site integrity.

2.2 Identification of international sites requiring consideration

Previous Shropshire Local Plan HRA Reports identified international sites in and around Shropshire (together with their designated features and conservation objectives), which could potentially be impacted by proposed plans or projects in the county. This information was updated for the purposes of the LPR HRA screening reports published to date, and again for this MDNDP HRA Screening Report.

Following the precautionary principle, the first step in the screening process was to identify all international sites within 15km of the MDNDP area. This figure was chosen as a starting point as the largest buffer identified in the literature to cover negative effects from a pathway was 15km (recreational effects on Cannock Chase). Additional sites were added to the screening by considering possible longer distance pathways i.e. River Severn SAC/SPA/Ramsar Sites downstream of Market Drayton and Cole Mere Ramsar site along the canal to the west.

Map 1 in Appendix 1 shows Market Drayton with a 15km buffer and the spread of international sites screened in to the assessment across the area being considered. Maps of each international site are also found in Appendix 1.

The international sites initially considered in this HRA Screening Report are listed below. Those sites within Shropshire are shown in bold:

1. **Brown Moss SAC**
2. **Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC**
3. **Midland Meres & Mosses Ramsar Phase 1**
 - a. Betley Mere
 - b. Brown Moss**
 - c. Wymbunbury Moss
4. **Midland Meres & Mosses Ramsar Phase 2**
 - a. Aqualate Mere
 - b. Cole Mere**
 - c. Cop Mere
 - d. Oss Mere
 - e. Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses**
5. River Severn SPA/SAC/Ramsar Site

2.3 Collation of information on international sites

Details of the international sites, their reasons for designation, conservation objectives and vulnerabilities can be found in Appendix 2 of this report. The SSSI's within the Midland Meres and Mosses Ramsar Phases 1 and 2 which are included in this assessment are also listed in Appendix 2. Conservation Objectives for the individual elements of the two Ramsar Sites are not available and Natural England has advised that Favourable Condition Tables for SSSI units may be used in their place.

Data on the international sites, including qualifying features were taken from the following sources:

- Natural England web site (www.publications.naturalengland.org.uk) including conservation objectives, site citations and SIPs;
- Joint Nature Conservation Committee website (www.jncc.gov.uk);
- Verbal and written evidence from officers in Natural England and the Environment Agency;
- A wide range of published and un-published reports on individual sites as indicated in section 6 References;
- Favourable Condition Tables for SSSI units provided by Natural England.
- HRA of Phase Two Revision of the West Midlands RSS – Screening note prepared for Government Office for the West Midlands by Treweek Environmental Consultants;
- Background information on Ramsar designation and specific site descriptions from www.ramsar.wetlands.org/

2.4 Identifying possible mechanisms for significant effects (effect pathways)

Mechanisms or ‘effect pathways’ have been identified by which the site allocations and policies in the MDNDP might affect international sites. These mechanisms may apply during construction or through long-term after-use of the development and have been summarised in Table 1 below.

Table 1: General effect pathways

General Effect pathway	Sub-categories
Air pollution	From increased traffic long term.
	Increased NOx gasses and nitrogen deposition.
	Increased sulphur dioxide.
	Increased acid deposition.
Hydrological impacts (water pathways)	Changes to groundwater quality and quantity.
	Changes to surface water quality and quantity.
	Overloading of waste water infrastructure.
	Pollution during flooding events.
	Increased run-off from hard surfaces.

	Increased silt from development, during and post construction, stirring up of sediment by boats, or other leisure activities.
Recreational impacts	Trampling and erosion of international site.
	Disturbance by people, dogs and other pets.
	Swimming by people and dogs.
	Increased hunting pressure from domestic animals.
	Eutrophication through dog faeces.
	Fishing and boat use.
	Damage from bikes and other vehicles.
	Interference with grazing and other management designed to maintain the features of the international sites.
	'Induced development' – development in some form required on international sites to counteract demand from visitors.
Biosecurity	Introduction or spreading of invasive species or disease e.g. through vehicle movement or by boats, people or dogs, or introduction of fish, non-native plants or other non-native organisms.
Light pollution	Effects of lighting on wildlife including behaviour and life-cycles.

2.5 Detailed consideration of potential effect pathways and buffer distances where applicable

Potential effect pathways identified in Table 1 are discussed below under the five main headings for this screening, namely:

- Air pollution,
- Water pathways
- Recreation
- Biosecurity
- Lighting.

2.5.1 Air pollution

All international sites in Shropshire and its 15km buffer have a background level of air-borne pollutants (particularly ammonia and NOx gases) above their Critical Levels or Critical Loads (levels or loads above which damage is likely). Hence, any additional pollution could have significant effects.

Environment Agency (2013) scoping criteria for examining air impacts, used in their permitting process, scopes out consideration of all Natura 2000 sites situated more than 10km from the source of emissions for all but the largest point-source emitters (e.g. smelting works or major power stations). The MDNDP does not allocate sites specifically for point sources of airborne pollution such as incinerators, bio-digesters, slurry lagoons etc. However, it does allocate land for business uses (unlikely to produce airborne pollution other than by traffic movements, but this would be addressed at project stage when detailed information is available). The nearest international site is almost 10km from the Plan boundary.

The Draft National Planning Policy Framework (NPPF) identifies a number of policy considerations relevant to air quality. The draft document states that opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. These issues will be considered in the development of new Local Plan policies as part of the ongoing review process and, in the allocation of additional development land to meet local housing and employment requirements.

A significant source of emissions likely to affect international sites are from combustion of fuel through traffic movements. Housing and employment allocations can significantly increase traffic movements from cars, HGVs and other vehicles. According to the Design Manual for Roads and Bridges 2007, the designated sites at risk from local air quality impacts are those which feature habitats that are vulnerable to nitrogen deposition/acidification and are within 200m of a road with increased traffic. For sites within 200m, if the number of traffic movements do not increase (in this case due to the MDNDP), by more than 1000 Annual Average Daily Traffic (AADT) movements or by 200 HGV AADT, either alone or in combination with other plans or projects, then they can be considered insignificant. When looking at in-combination effects, we must not only consider AADTs generated by the new allocations, but also the AADTs generated by the Local Plans of surrounding counties. Where necessary these will need to be assessed using traffic projections followed by local air quality modelling.

None of the international sites within 15km of the MDNDP area lie within 200m of a major road. The nearest international sites within 200m of a major road are Sweat Mere and Clarepool Moss at c. 23km to the west as the crow flies. There are no direct major or minor road connections to these sites and so, in terms of driving, the distance is much greater. The settlements of Shrewsbury, Whitchurch and Wem lie to the south, north and west, between Market Drayton and these international sites. Based on an estimated figure of 30 dwellings per hectare, the allocations in the MDNDP are likely to result in less than 700 new dwellings.

Research is currently being carried out at a Shropshire and surrounding counties level on predicted road traffic emissions. If necessary, adjustments will be made to site allocations, or mitigation measures will be applied, to take the research findings into account at the Local Plan Review level. Further research is not recommended for the MDNDP and it is considered there will be no significant effect (potentially no effect) on international sites from these allocations due to increased traffic alone or in combination.

2.5.2 Hydrological impacts (water pathways)

Hydrological impacts can be divided into strategic and local and qualitative and quantitative. It is not possible to use a standard set buffer distance for hydrological impacts as it depends on whether there is hydrological continuity between proposed development and the protected site.

Strategic impacts include water abstraction from regional groundwater and the capacity of sewage treatment works to cope with the additional sewage before discharge into water courses. If insufficient water is available for new development in aquifers, then abstraction could reduce water levels in wetland international sites that are fed by main aquifers. If there is insufficient infrastructure to cope with the additional foul-water drainage, then damage could occur to international sites through in-wash of nutrient-rich water during floods or through use of less efficient waste disposal methods (package treatment plants and cess pits).

The 'Shropshire Outline Water Cycle Study 2010' and the 'Water cycle evidence for Shropshire Local Plan, 2014' were commissioned to inform the Shropshire Core Strategy and SAMDev Plan. These documents cover water resources, water quality and wastewater treatment. The studies described the settlement of Market Drayton as a 'suitable site for development, likely to be environmental and infrastructure capacity to accept further growth than planned, subject to more detailed assessment. Some flood risk constraints identified'.

Local effects could be those that cause an increase in abstraction from surface water catchments or perched water tables of international sites or result in increased numbers of package treatment plants/cess pits or other sources of pollution in surface water catchments of international sites.

The surface water catchments of most of the Midland Meres and Mosses Ramsar sites have been mapped by Natural England. Shropshire Council has sought further information contained within the Environmental Consultancy University of Sheffield (ECUS) reports, which has allowed refinement of the surface water catchment areas. In addition, Natural England has now published Impact Risk Zones (IRZ's) for SSSI's. This information has been used during the screening process for local effects on water pathways.

According to Atkins (2012), consideration of water level data suggests that all of the meres and their respective groundwater catchments are perched above the deep regional groundwater system. The meres and mosses are therefore more strongly influenced by the functioning and character of the local aquifer systems of recent, post-glacial origin rather than conditions in the regional aquifer. As a result, they are likely to strongly reflect activities in the landscape local to them and may be susceptible to land use changes in their respective catchments. **Atkins concluded that in most cases the surface water catchment can be broadly taken as the groundwater catchment for these sites.**

Abstractions require consent from the Environment Agency or Natural Resources Wales and these are assessed in line with the Habitats Regulations. The Water Framework Directive is the first line of defence for groundwater, and will drive action on point source pollution as well as the widespread pollutants such as nitrate.

Existing Council policies already require development to avoid adverse impacts on water quality and levels. Policy CS18 Sustainable Water Management of the Core Strategy states that Developments will integrate measures for sustainable water management to reduce flood risk, avoid an adverse impact on water quality and quantity within Shropshire, including groundwater resources and sets out detailed requirements of developments. Furthermore, Shropshire Council Sustainable Design (Part 1) SPD 2011 provides detailed guidance to developers on avoiding impacts on water quality and levels through water efficiency and SUDs schemes. As part of planning applications, detailed information necessary to assess impacts on international sites such as groundwater flow direction and levels, any proposed abstraction and so forth will be required from the applicant.

The Shropshire Union Canal flows through the MDNDP area with a general direction of flow south and eastwards. No international sites have been identified with a connection to the canal as far as Wolverhampton. In any case, at the project stage, any marina or other development by the canal will need to provide routine but detailed pollution protection measures to the Local Planning Authority.

2.5.3 Recreation pathways

Natural England have advised that any international sites that do not have public access can generally be screened out for recreational effects. Additional checks have been made for sites without public access but with footpaths nearby. Where use appears to be minimal or absent it is assumed additional housing will not add to recreational impacts on these sites.

Those sites within 15km of the MDNDP boundary with public access or signs of public use are:

- Brown Moss Ramsar (31ha)
- Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses Ramsar (948ha)

Natural England's Accessible Natural Greenspace Guidance (2010) has been used in estimating how far people are likely to travel to natural green spaces. The research which fed into development of this guidance found that larger sites attracted visits from further away and also that a walking distance of approximately 5 minutes from home was defined as a threshold above which daily park visits decreased significantly.

The so-called ANGSt, Natural England's Accessible Natural Greenspace Standard, recommends that everyone should have an accessible natural greenspace:

- of at least 2 hectares in size, no more than 300 metres (5 minutes walk) from home;
- at least one accessible 20 hectare site within two kilometres of home;
- one accessible 100 hectare site within five kilometres of home; and
- one accessible 500 hectare site within ten kilometres of home;

The background research from which this standard was developed suggested that for sites of the following sizes, people were prepared to travel the following distances to accessible natural greenspace of differing sizes:

- At least 2ha in size, no more than 300m (5 minute walk)
- At least 20 ha in size, no more than 2km

- At least 100ha in size, no more than 5km
- At least 500ha in size, no more than 10km

The largest international site under consideration in this HRA is Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC at 928ha. Mountain biking is not an issue at Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC, but due to the size of the site, an informal 10km 'zone of influence' has been applied in screening allocations and settlements. The MDNDP area is over 14.4km from Fenn's Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC

Brown Moss SAC and Ramsar Site is a Shropshire Council countryside site identified as having potential issues with recreational impacts. Visitor surveys are currently underway to provide an evidence base for the LPR and to draft a Site Visitor Management Plan to help assess if effects will be significant and allow development of mitigation measures. Survey results obtained so far suggest that that the 'zone of influence' (distance below which 75% of visitors travel to the site) is 3.8km for Brown Moss, which is 9.9km from the MDNDP area.

2.5.4 Biosecurity pathways

To the north and west of the MDNDP area, there are hydrological links between the Shropshire Union Canal and Cole Mere and Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC in the form of spillways and sluices for canal water level management. Canal boats already travel from the MDNDP area towards these sites.

There is a potential risk of invasive species spreading from the canal. The invasive shrimp species or 'Demon Shrimp' *Dikerogammarus haemobaphes* has been recorded on the canal near Newport (Shropshire). This invasive, non-native species eats native shrimps and insects and therefore could affect the invertebrate communities of sensitive sites. The 'demon shrimp' is spread on equipment, foot-ware, fishing tackle etc. Boat movements could theoretically transport the shrimp along the canal and thereafter it could enter Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC or Cole Mere Ramsar Site via the water connection or through being carried on visitors' equipment and footwear.

For Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC, Natural England have stated that this is not considered a threat to the designated features of the main area of the SAC/Ramsar Site as *Dikerogammarus haemobaphes* cannot thrive in the acidic water supporting the habitats for which the site was designated.

At Cole Mere Country Park (Ramsar Site), the spillway is a possible impact pathway for the spread of *Dikerogammarus haemobaphes*. This species could also enter Cole Mere via anglers, kayaks, boating club boats and equipment, independent of canal use. The Environment Agency advice on control of this species is to thoroughly clean and dry any fishing or boating equipment.

The capacity of the proposed marina is not stated in MDNDP policy S.M1, but this is likely at most to produce a modest increase in canal boat traffic. Information previously supplied by the Canal and Rivers Trust indicates a current boat movement count in the order of 15,000 per year. A recent marina proposal nearer to Cole Mere predicted a boat movement increase of just over 700 boat movements per year. Such increases would not make it more likely that

Dikerogammarus haemobaphes would spread into Cole Mere. The shrimp is already spreading along the canal towards these sites and anglers and a boat club are already active at Cole Mere.

2.5.5 Lighting pathways

Lighting effects will only be an issue if the international site is close enough to receive light pollution from a site allocation. Light can interfere with the life cycles of many nocturnal animals including bats, otters and a wide range of invertebrates, for which international sites may have been designated. The nearest international site to the MDNDP area boundary is nearly 10km away.

3. Screening or assessment of potential effects

3.1 Initial screening of policies and site allocations in the MDNDP

The policies and site allocations in the MDNDP have been initially screened for possible ecological pathways to international sites and the results are presented in Appendix 3.

The following policies have been **screened out** as they relate to policies that are concerned with protecting the natural environment, enhancing the natural or cultural environment where the enhancements will not have a negative effect on an international site or are concerned with the design of development, not its location:

- S.M2 Proposed Marina and Associated Tourism, Leisure and Related Development
- S.M3 Alternative Use of Land at Longford Turning for Formal and Informal Recreation
- S.M7 Green Infrastructure Network
- S.M9 Enhancement of the Wildlife along the Former Railway Cutting South of Greenfields.

The remaining policies and site allocations, which could potentially affect international sites are as follows:

- S.M1 Proposed Marina and Associated Tourism, Leisure and Related Development
- S.M4 Land off Maer Lane
- S.M5 Land at Greenfields
- S.M6 Housing Land off Longford Road
- S.M8 Regeneration of land to the rear of the Red Lion Public House and adjacent to Stafford Street
- S.M10 Land Adjacent to Market Drayton Swimming Pool

Sites allocated in Market Drayton in the SAMDev Plan, which have not yet been developed, will be carried forward into the Local Plan Review. These sites, possible effect pathways and any required mitigation measures, have already been considered in the SAMDev Plan HRA (SAMDev policy S11:Market Drayton). During the LPR, as a precautionary measure, these sites are being re-screened against any new information on international sites, if this has become available since the adoption of the SAMDev Plan, and against any relevant policy wording changes

proposed by the LPR. In general, it is likely that these sites and their mitigation measures will be carried over to the new Local Plan.

In view of the above, sites allocated in the SAMDev Plan will not be considered in the MDNDP HRA unless there are possible 'in-combination' effects. New sites have yet to be allocated through the LPR, although the scale of new development from 2026 to 2036 has been published. However, this is beyond the end date of the MDNDP and sites allocated in the MDNDP will be considered in-combination in the HRA of the LPR.

3.2 Screening for likely significant effects on international sites via remaining policies and site allocations in the MDNDP

For each of the international sites screened in to this assessment, the likelihood of significant effects resulting from the identified potential effect pathways has been considered for each remaining MDNDP policy. The potential for in-combination effects has also been considered. The results are summarised in the tables below:

Table 2 Screening of Aqualate Mere

Site Name:	Aqualate Mere, Midlands Meres and Mosses Ramsar Phase 2, NNR						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Potential effect	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, outside plan area.	No effect, large point sources not allocated. No major roads within 200m of Aqualate Mere.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is at least 15km from Plan boundary.	No effect, there would be minimal, if any, public access from allocated sites. Transfer of invasive species via visits from additional residents very unlikely.	No effect, Site is outside Plan area and 15km to south-east.
Possible effects in combination with other plans	Some public access is available to Aqualate Mere but this is restricted by Natural England to permit holders only. The closest point of the Plan boundary is 15km from Aqualate Mere which has an area of 241ha.						

Assessment of effects and their likely significance	Visitor access is restricted and according to ANGst values, the majority of visitors to the site would travel from within 5km. The Plan Area is about three times this distance from the Site. No effects alone or in-combination are expected.
Conclusion	No effects, alone or in-combination.

Table 3 Screening of Betley Mere

Site Name:	Betley Mere, Midlands Meres and Mosses Ramsar Phase 1						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	No- no public access	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, Site lies outside the Plan boundary.	No effect, large point sources not allocated. No major roads within 200m.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.		No effect, no public access so transfer of invasive species via visits from additional residents very unlikely.	No effect, Site is outside Plan area and 13km to north-west.
Possible effects in combination with other plans	As no effects from the MDNDP have been identified on Betley Mere, then there can be no effects in-combination with other plans or projects.						
Assessment of effects and their likely significance	No effects, either alone or in-combination have been identified.						
Conclusion	No effects, alone or in-combination.						

Table 4 Screening of Brown Moss

Site Name:	Brown Moss SAC and Meres and Mosses Ramsar Phase 1						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, Site lies outside the Plan boundary.	No effect, large point sources not allocated. No major roads within 200m.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.	Possible effect, Site has free public access but lies over 9km from Plan boundary. ANGst values and bespoke visitor surveys indicate the number of visitors would be minimal.	No effect. Site already has free public access and has been colonised by <i>Crassula helmsii</i> and <i>Azolla filiculoides</i> .	No effect, Plan boundary is over 9 km from the Site.
Possible effects in combination with other plans	Potential recreational pressures due to increased visits from new housing and tourism/leisure developments.						

<p>Assessment of effects and their likely significance</p>	<p>For a site with the area of Brown Moss, ANGst values (see section 2.5.3) indicate that the majority of visits would be from people living within 5km of the Site. The nearest Plan boundary is over 9km away. An informal visitor survey on Brown Moss recorded 92% of visitors travelling less than 5km in 2014. A formal visitor survey in 2017 found that 75% of visitors from Shropshire travelled from within 3.4km. In view of these distances, it is considered there will be no effect on Brown Moss as a result of residential or tourism/leisure site allocations. Although mitigation measures are not required, policies S.M3, S.M7, S.M9 and S.M10 relate to new and improved leisure/public open space provision within the Plan area.</p>
<p>Conclusion</p>	<p>No effects, alone or in-combination.</p>

Table 5 Screening of Cole Mere

Site Name:	Cole Mere Meres and Mosses Ramsar Phase 2						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, Site lies outside the Plan boundary.	No effect, large point sources not allocated. No major roads within 200m.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.	Possible effect, Site has free public access but lies over 21km from Plan boundary. ANGst values and bespoke visitor surveys indicate the number of visitors would be minimal.	Possible spread of 'Demon Shrimp' or similar invasive species by increased boat movements encouraged by development of canal marina, although impact very unlikely due to existing level of boat movements.	No effect, Plan boundary is over 21 km from the Site.
Possible effects in	Potential recreational pressures due to increased visits from owners of new housing and tourism/leisure developments. Potential biosecurity issues due to spread of 'Demon Shrimp' via boat movements.						

combination with other plans	
Assessment of effects and their likely significance	<p>For a site with the area of Cole Mere, ANGst values (see section 2.5.3) indicate that the majority of visits would be from people living within 5km of the Site. The nearest part of the Plan boundary is over 21 km away. An informal visitor survey on Cole Mere recorded that visitors travelled on average 7.7 km in 2017. A formal visitor survey in 2017 found that 75% of visitors from Shropshire travelled from within 11.7 km. In view of these distances, it is considered there will be no effect alone or in-combination on Cole Mere as a result of residential or tourism/leisure site allocations. Although mitigation measures are not required, policies S.M3, S.M7, S.M9 and S.M10 relate to new and improved leisure/public open space provision within the Plan area.</p> <p>As there are already c. 15,000 boat movements per year in the Shropshire Union Canal past Cole Mere, the relatively small number of potential additional boat movements, generated by a new marina at Market Drayton, will not affect the spread of this species to Cole Mere. Provision of information on measures to avoid spread of this species at the new marina would provide an enhancement effect.</p>
Conclusion	No effects, alone or in-combination.

Table 6 Screening of Cop Mere

Site Name:	Cop Mere, Midland Meres and Mosses Ramsar Phase 2						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	No	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, outside plan area.	No effect, large point sources not allocated. No major	No effect, Plan area is outside the surface	No effect, Plan area is outside the surface		No effect, no public access so transfer of invasive species via	No effect, Site is outside Plan area and

		roads within 200m.	water catchment.	water catchment.		visits from additional residents very unlikely.	11km to south-east.
Possible effects in combination with other plans	As no effects from the MDNDP have been identified on Cop Mere, there can be no effects in-combination with other plans or projects.						
Assessment of effects and their likely significance	No effects, either alone or in-combination have been identified.						
Conclusion	No effects, alone or in-combination.						

Table 7 Screening of Fenn’s, Whixall, Bettisfield, Wem and Cadney Mosses

Site Name:	Fenn’s, Whixall, Bettisfield, Wem and Cadney Mosses SAC and West Midlands Meres and Mosses Ramsar Phase 2						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is MDNDP likely to impact upon this site.	No effect, outside plan area.	No effect, large point sources not allocated. No major roads within 200m.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.	No effect, Plan boundary is over 14km from the Site.	Possible spread of ‘Demon Shrimp’ or similar invasive species by increased boat movements encouraged by development of canal marina, although impact very unlikely due to existing level of boat movements.	No effect, outside plan area.

Possible effects in combination with other plans	No visitor survey data are available for this site, but effects from increased visitor pressure have been screened out as ANGst values suggest a visitor catchment of 10km, whilst the site is at least 14km from the nearest Plan boundary. In addition, the Site is a National Nature Reserve with visitor management measures in place, including much of the site being out of bounds to all except permit holders (permits issued by Natural England).
Assessment of effects and their likely significance	There are no effects likely, alone or in-combination, due to recreational visits, because of the distance from the Plan area. There are also visitor management measures in operation on the NNR. The potential for spreading 'demon shrimps' <i>Dikerogammarus haemobaphes</i> on to the SAC and its pools and ditches via foot ware and fishing tackle from the Shropshire Union Canal has been considered. Following communication with the site manager (Natural England) this is not considered a threat to the designated features of the main area of the SAC/Ramsar Site as it cannot thrive in acidic water.
Conclusion	No effects, alone or in combination.

Table 8 Screening of Oss Mere

Site Name:	Oss Mere, Midland Meres and Mosses Ramsar Phase 2						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	No	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, outside plan area.	No effect, large point sources not allocated. No major	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.		No effect, no public access so transfer of invasive species via visits from	No effect, Site is outside Plan area and 11km to south-east.

		roads within 200m.				additional residents very unlikely.	
Possible effects in combination with other plans	As no effects from the MDNDP have been identified on Oss Mere (12.9km from plan boundary), there can be no effects in-combination with other plans or projects.						
Assessment of effects and their likely significance	No effects, either alone or in-combination have been identified.						
Conclusion	No effects, alone or in-combination.						

Table 9 Wybunbury Moss

Site Name:	Wybunbury Moss, West Midlands Mosses SAC, Midlands meres and Mosses Ramsar Phase 1, NNR						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Yes, limited public access	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, outside plan area.	No effect, large point sources not allocated. No major roads within 200m.	No effect, Plan area is outside the surface water catchment.	No effect, Plan area is outside the surface water catchment.	No effect, due to distance from the Plan area and limited public access.	No effect, no public access so transfer of invasive species via visits from additional residents very unlikely.	No effect, Site is outside Plan area and 14km to north.
Possible effects in combination with other plans	No effects from the MDNDP have been identified except possibly recreational effects on Wybunbury Moss. However, this 23.3 ha site is over 14.5 km from the Plan area. Due to the dangerous nature of the majority of the site (floating peat and deep water), public access is limited to a circular walk on public footpaths around the outside of the moss and a small section of permissive path into the moss itself. Otherwise access is by permit only, issued by Natural England.						
Assessment of effects and their likely significance	Based on the ANGst distance for a site of this site, one would expect the majority of visitors to come from less than 5km away. The Plan area is almost 3 times this distance. In addition, public access is carefully controlled by Natural England. No effects, either alone or in-combination have been identified.						
Conclusion	No effects alone or in-combination						

Table 10 River Severn

Site Name:	River Severn SAC, SPA and Ramsar Site						
	Direct habitat loss	Air Quality	Water Quality	Water Quantity	Recreational Pressures	Biosecurity	Light pollution
Is site sensitive to effect pathway?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is MDNDP likely to impact upon this site	No effect, outside plan area.	No effect, large point sources not allocated. Site is over 70km from Plan area.	Possible effect, Plan area is drained into the Severn catchment, .	Possible effect, water for Plan area is drawn from the River Severn catchment.	No effect, Plan area is over 70km from the Site.	No effect, due to distance of Site from Plan area.	No effect.
Possible effects in combination with other plans	The Outline Water Cycle Study 2010 (Ref. 10) stated for the town of Market Drayton ‘Suitable site for development, likely to be environmental and infrastructure capacity to accept further growth than planned, subject to more detailed assessment.’ The ‘Water cycle evidence for Shropshire Local Plan, 2014’ (Ref. 11) also indicated that there was hydrological capacity for the additional 900 or so dwellings in the SAMDev Plan. As part of the Local Plan Review a new water cycle study has been commissioned to cover additional housing allocations to 2036. However, the results of this study are not yet available						
Assessment of effects and their likely significance	Although the relatively small number of dwellings proposed in the MDNDP are very unlikely to have a significant effect alone, uncertainty remains in-combination with other plans or projects. Mitigation measures should be applied to remove the uncertainty and so Appropriate Assessment is required for this site.						
Conclusion	Uncertainty remains for effects in-combination.						

4 Appropriate Assessment

4.1 Appropriate Assessment of potential effects on the integrity of the River Severn SAC/SPA and Ramsar Sites

The River Severn SAC/SPA and Ramsar Sites are sensitive to changes in both water quality and quantity (see section 2.5.2). Although these sites are c.77km downstream of Shropshire's border and there are numerous discharges and considerable dilution below the Plan area, in-combination effects may still remain.

As indicated in Table 9 above, existing water cycle studies (Refs. 10 and 11) suggest that sufficient water resources and foul-water drainage capacity are likely to be available, but the results of a current water cycle study to inform development up to 2036 have yet to be published. Any residual uncertainty can be removed by application of existing Local Plan policy at the project stage.

Any development as a result of policies in the MDNDP would need to take account of policies in the Local Plan and the NPPF. Core Strategy Policy CS18 on Sustainable Water Management requires new development to protect water quality. All major developments are required to submit a Surface Water Management Statement/Plan. Both Policy CS18 and the Shropshire Council Surface Water Management: Interim guidance for Developers dated June 2011 encourages use of SUDS schemes. In addition, new development is required to meet minimum water efficiency requirements.

SAMDev policy MD2: 'Sustainable Design' requires all new development to demonstrate that there is sufficient existing infrastructure capacity, in accordance with MD8: 'Infrastructure provision'. MD8 states that new development should only take place where there is sufficient existing infrastructure capacity or where the development includes measures to address a specific capacity shortfall which it has created or which is identified in the LDF Implementation Plan and Place Plans. Where a shortfall is identified, appropriate phasing will be considered in order to make development acceptable.

Following the findings of the Water Cycle Studies and application of the existing local planning policy framework on the relatively small allocations in the MDNDP, there should be no adverse effect on the integrity of the River Severn SAC/SPA/ Ramsar sites, alone or in-combination.

5 Conclusions and recommendations

A total of 5 international sites (comprising 11 separate SSSIs) have been identified for consideration in the Market Drayton Neighbourhood Development Plan HRA Screening Report. Possible pathways for significant adverse effects on these international sites, as a result of the MDNDP, have been identified and placed in five main categories: air pollution; water pathways; recreation pathways; biosecurity pathways and light pollution. Policies within the MDNDP have been screened for potential to effect international sites and the policies which could not be immediately screened out have been assessed against the sensitivities of the international sites.

All but the River Severn SAC/SPA/Ramsar sites have been screened out as the MDNDP would have no effect or no likely significant effect, alone or in-combination with other plans or projects. No mitigation measures were required to screen out these sites.

The conclusion of the Appropriate Assessment of potential effects on the River Severn SAC/SPA/Ramsar sites was that application of Local Plan Policies at the project stage would prevent any adverse effects on site integrity, alone or in-combination.

This Market Drayton Neighbourhood Development Plan HRA Screening report concludes that the Plan will have no adverse effects, alone or in-combination with other plans or projects, on the integrity of international sites.

6 Public consultation

The Market Drayton Neighbourhood Plan has been subject to public consultation through the legislative requirements governing Neighbourhood Plan making. Market Drayton Town Council submitted the Regulation 15 version of the Plan to Shropshire Council in May 2018 and this will be subject to a six week consultation in line with Regulation 16. The HRA will be available for public consultation at this stage.

7 References and abbreviations

The following documents have informed this report:

References

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3. David Tyldesley and Associates for Countryside Council for Wales. (2012) Draft Guidance for Plan Making Authorities in Wales, The Appraisal of Plans Under the Habitats Regulations for Countryside Council for Wales CCW Bangor
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5. European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites
6. Highways Agency, (2007) Design Manual for Roads and Bridges HA207/07, Volume 11, Section 3, (2007), Environmental Assessment Techniques.
7. ODPM Circular 06/2005: (Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System)
8. Scottish Natural Heritage (January 2015) Habitats Regulations Appraisal of Plans
9. Shropshire Council Local Development Framework Adopted Core Strategy March 2011
10. Shropshire Council (2010) Outline Water Cycle Study Final Report
11. Shropshire Council (2014) Water Cycle Evidence for Shropshire Local Plan
12. The Conservation of Habitats and Species Regulations 2017 (the “Habitats Regulations”)
13. White, J, Liley, D. & Underhill-Day, J. (2009). Cannock Chase Visitor Impact Mitigation Strategy. Footprint Ecology. Previous Shropshire HRA documents
14. Core Strategy Development Plan Document: Habitats Regulation Assessment, Screening Report (March 2009)
15. Core Strategy Development Plan Document: Habitats Regulation Assessment, Stage 2 Report (February 2010)
16. Draft Stage 3 Habitats Regulation Assessment Reports of potential allocations was prepared in October 2011 for the Site Allocations and Management of Development DPD
17. SAMDev Draft Development Management Policies HRA January 2013
18. SamDev Pre-Submission Draft Habitats Regulation Assessment (draft March 2014)
19. Shropshire Council SAMDev Habitats Regulation Assessment (July 2014)
20. Shropshire Council (January 2017) Local Plan Review 2016 – 2036, Issues and Strategic Options Habitat Regulations Assessment Initial Screening Report.

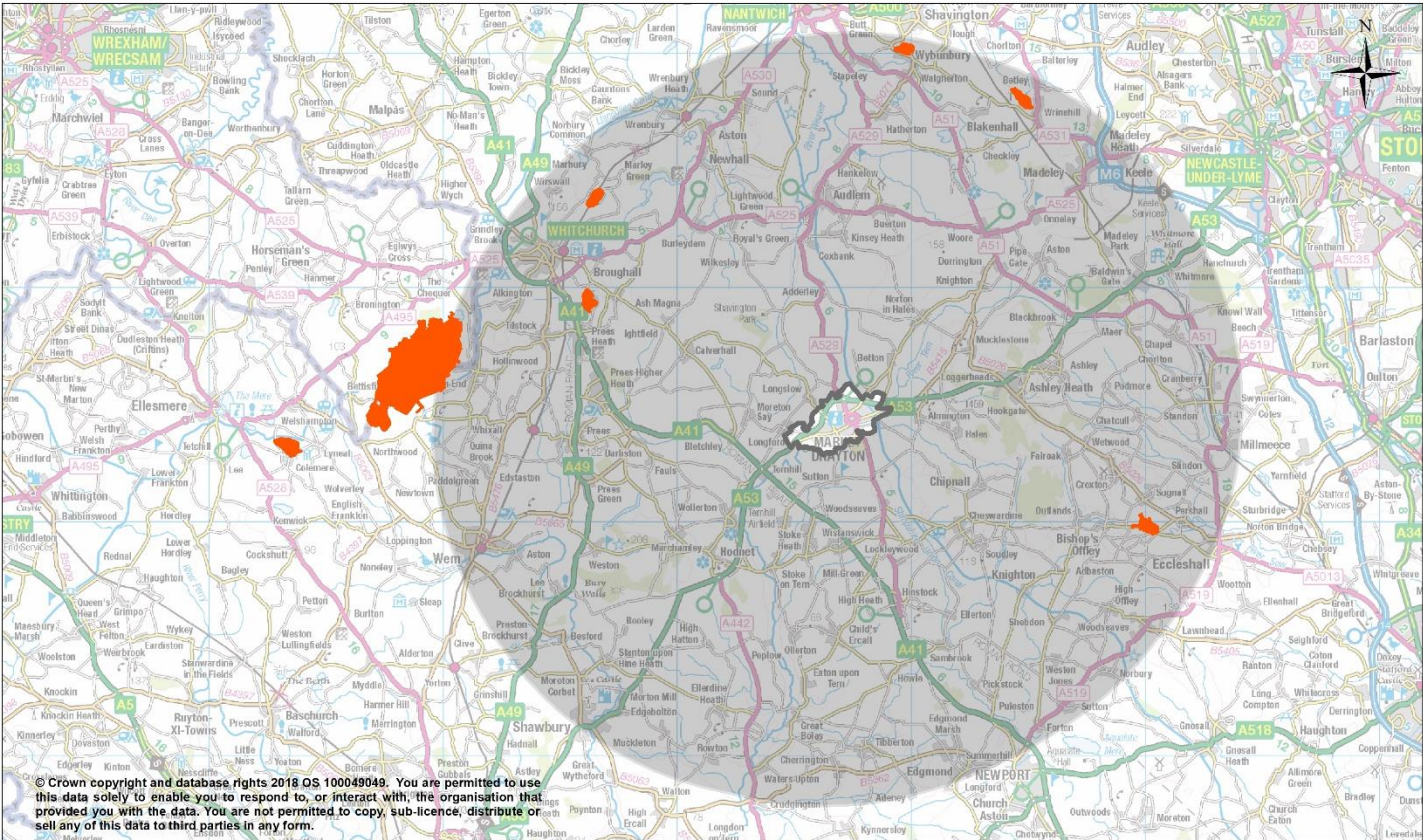
21. Shropshire Council Local Plan Review 2016-2036, Preferred Options: Scale and Distribution of Development, Habitats Regulations Assessment Screening Report, (October 2017).

Abbreviations and definitions

NE	Natural England
EA	Environment Agency
HRA	Habitats Regulations Assessment
SPA	Special Protection Area classified in accordance with Article 4 of the EC Birds Directive (1979)
SAC	Special Area of Conservation designated under the EC Habitats Directive.
Ramsar site	A site listed as a wetland of international importance under the provision of the Ramsar Convention. A Ramsar site is not a 'European site' as a matter of law but is given the same protection as SPA's and SAC's.
International site	One of the following designated sites: <ul style="list-style-type: none"> • Special Area of Conservation (SAC), • candidate SAC (cSAC), • possible SAC (pSAC), • Special Protection Area (SPA), • potential SPA (pSPA), • proposed and listed Wetlands of International Importance (Ramsar Sites)
Natura 2000 Site	The Europe-wide network of SPA's and SAC's
IRZ	Natural England Impact Risk Zone
LPR	Local Plan Review
SAMDev	Site Allocations & Management of Development Plan
SPD	Supplementary Planning Document

Appendix 1: Maps of international sites considered in this report

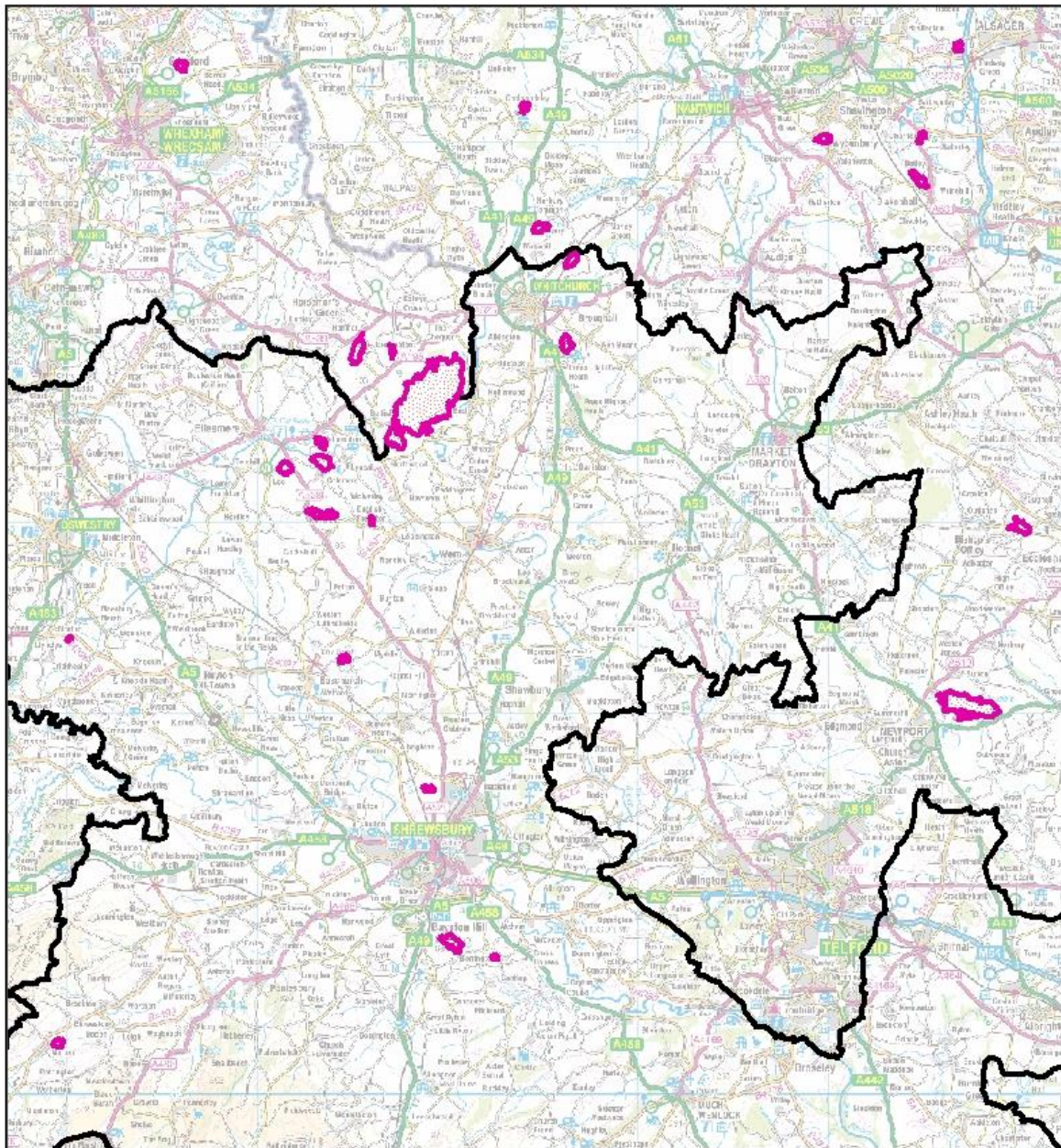
Map 1 MDNDP Plan Area with 15km buffer



International Sites

Shropshire Council
 The Shirehall, Abbey Foregate,
 Shrewsbury, Shropshire, SY2 6ND
 Scale : 1:150,000

Map 2 Midlands Meres and Mosses Ramsar sites Phase 1 and 2



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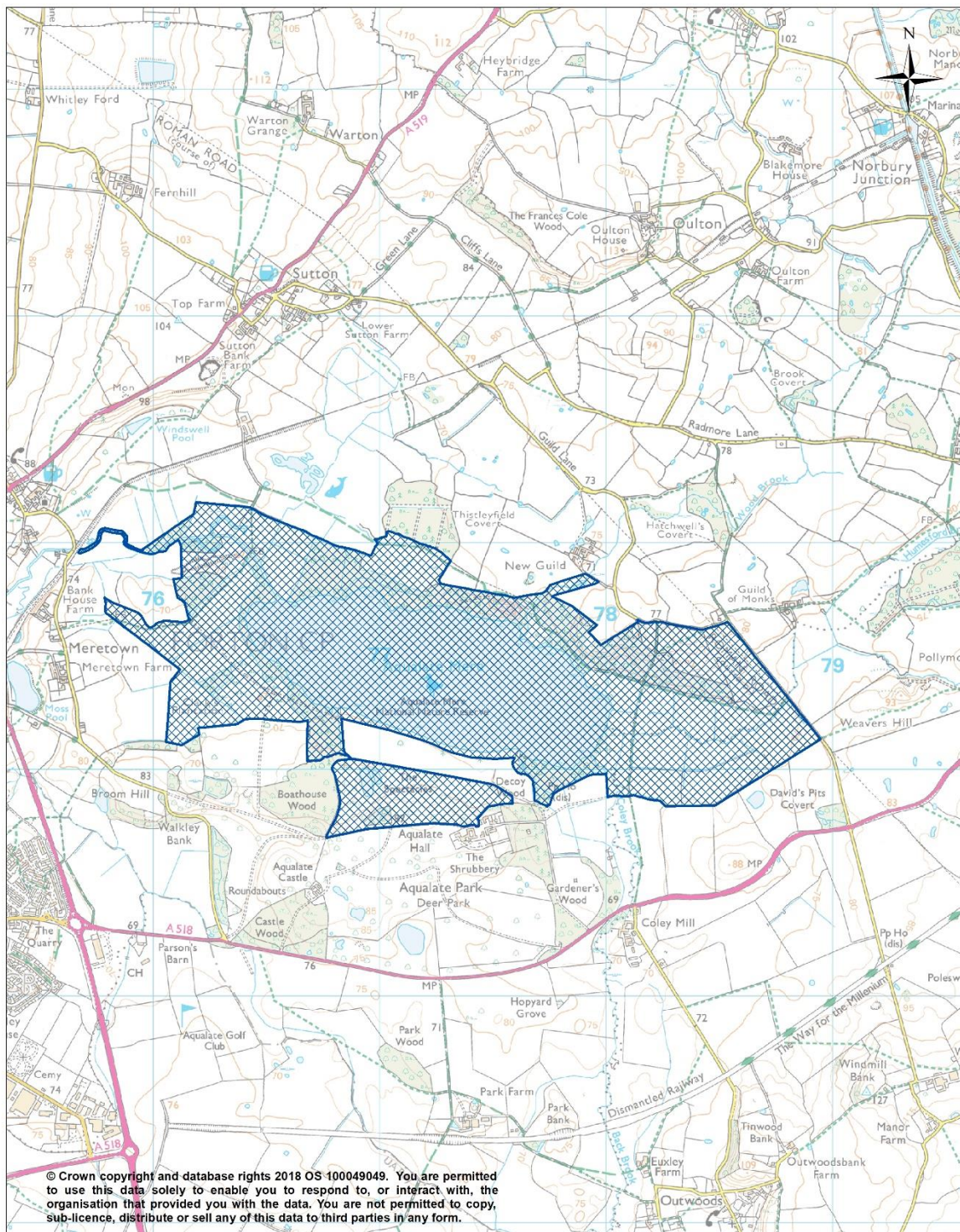
Midland Meres & Mosses Ramsar Phase 1 & Phase 2

Development Services
The Shirehall, Abbey Foregate
Shrewsbury, Shropshire, SY2 6ND



Scale: 1:268,390

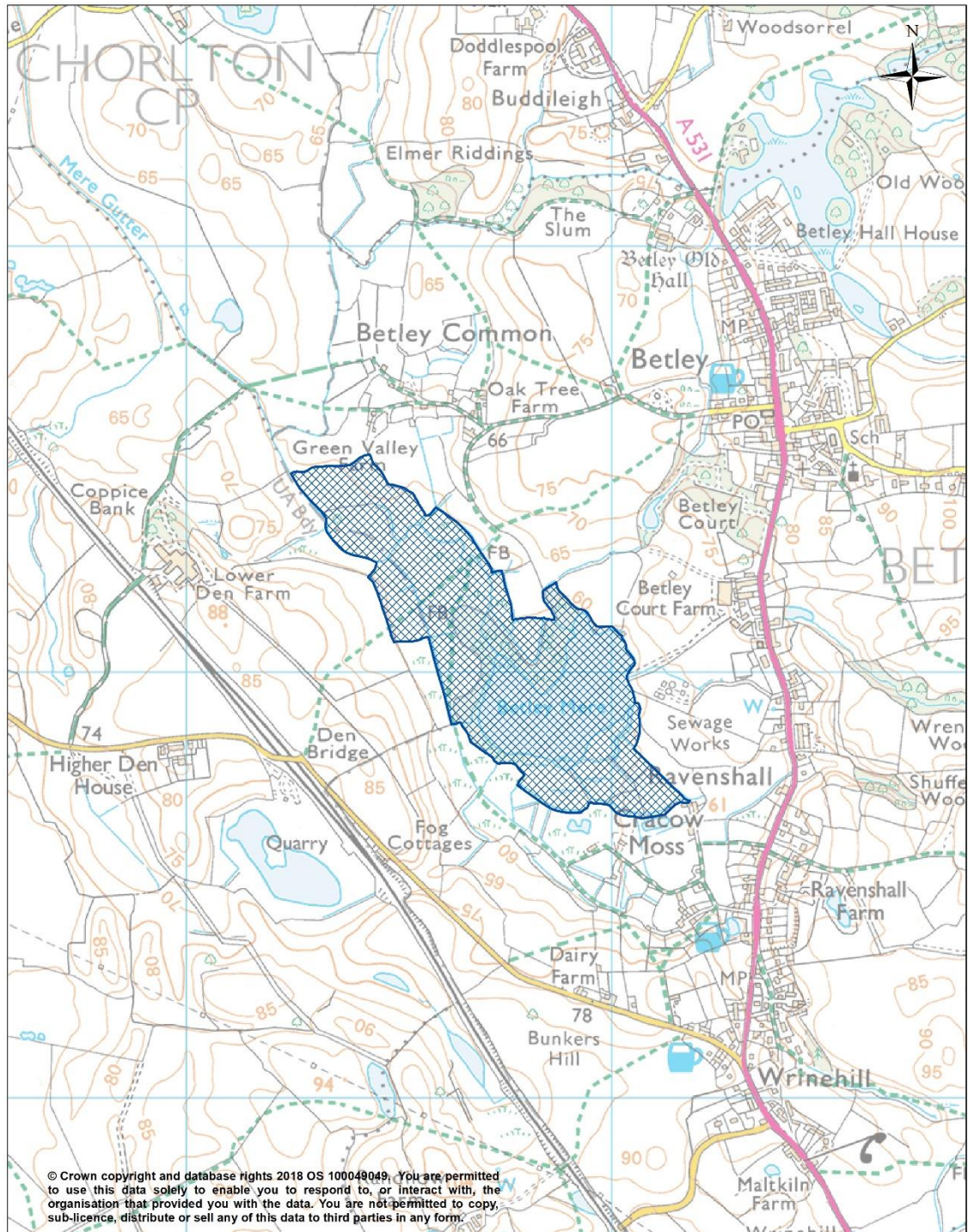
Map 3 Aqualate Mere Ramsar site



Aqualate Mere SSSI

Scale : 1:15,000

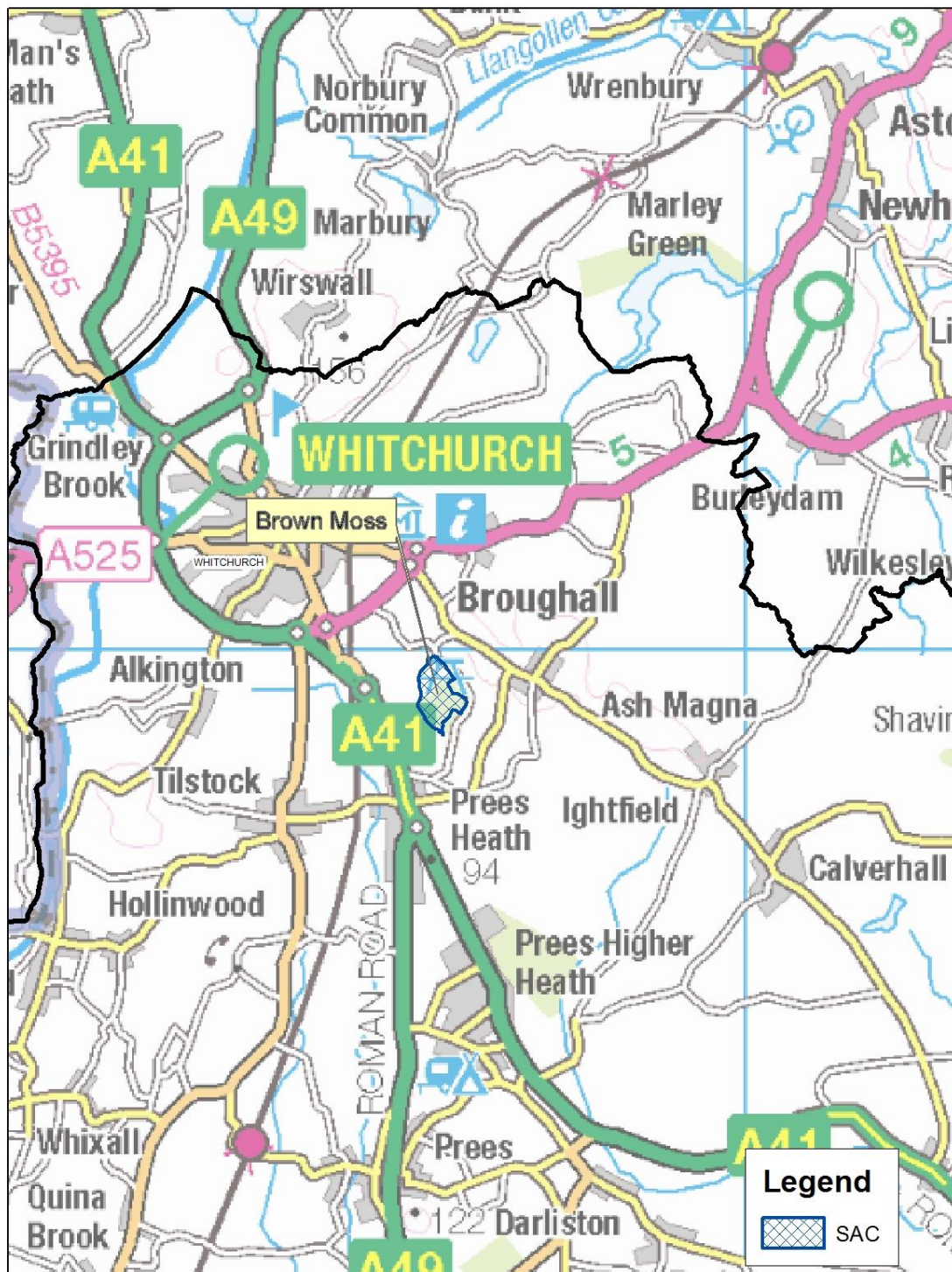
Map 4 Betley Moss Ramsar site



Betley Mere SSSI

Scale : 1:8,000

Map 5 Brown Moss SAC/Ramsar site



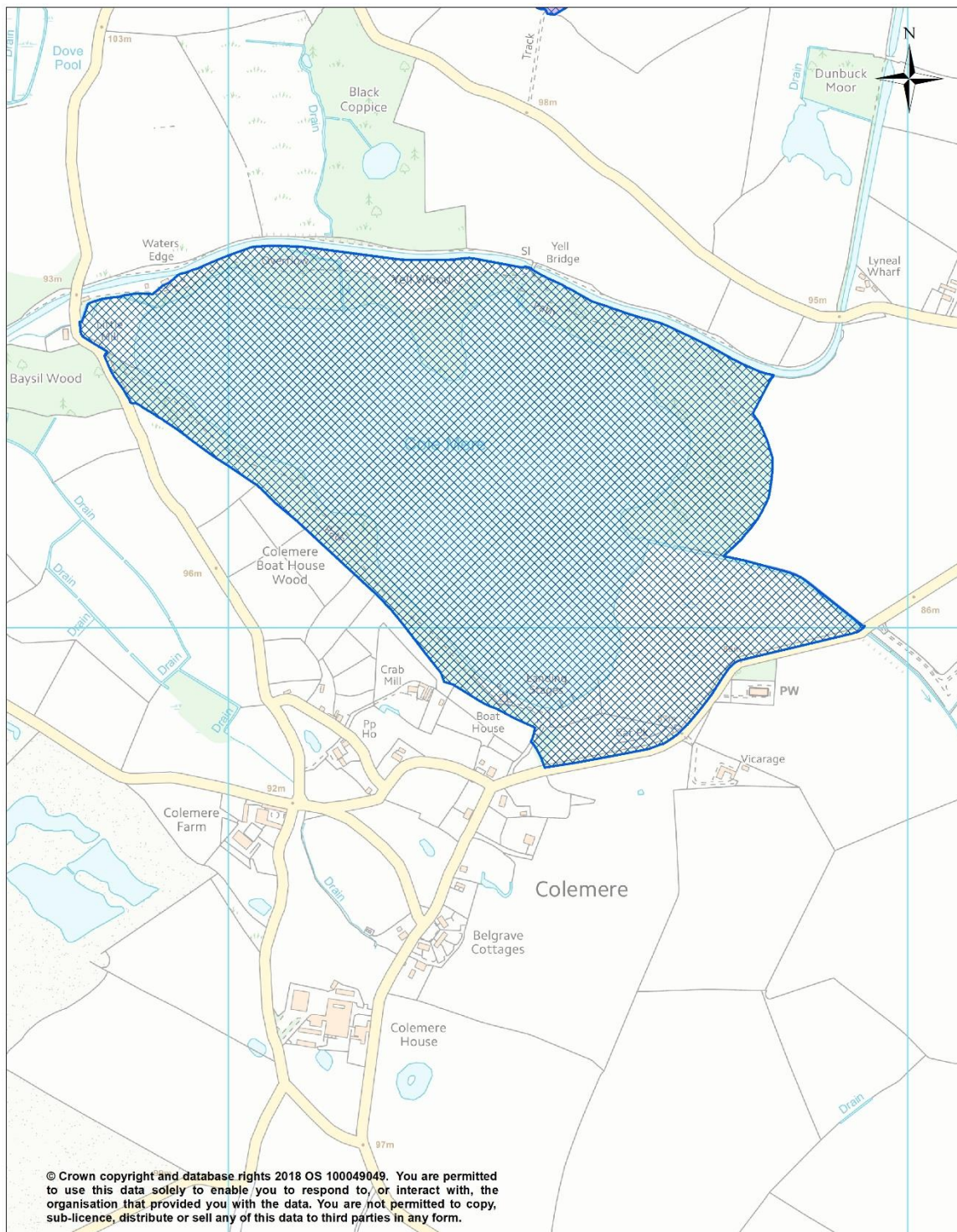
Brown Moss SAC



0 0.5 1 2 Kilometers
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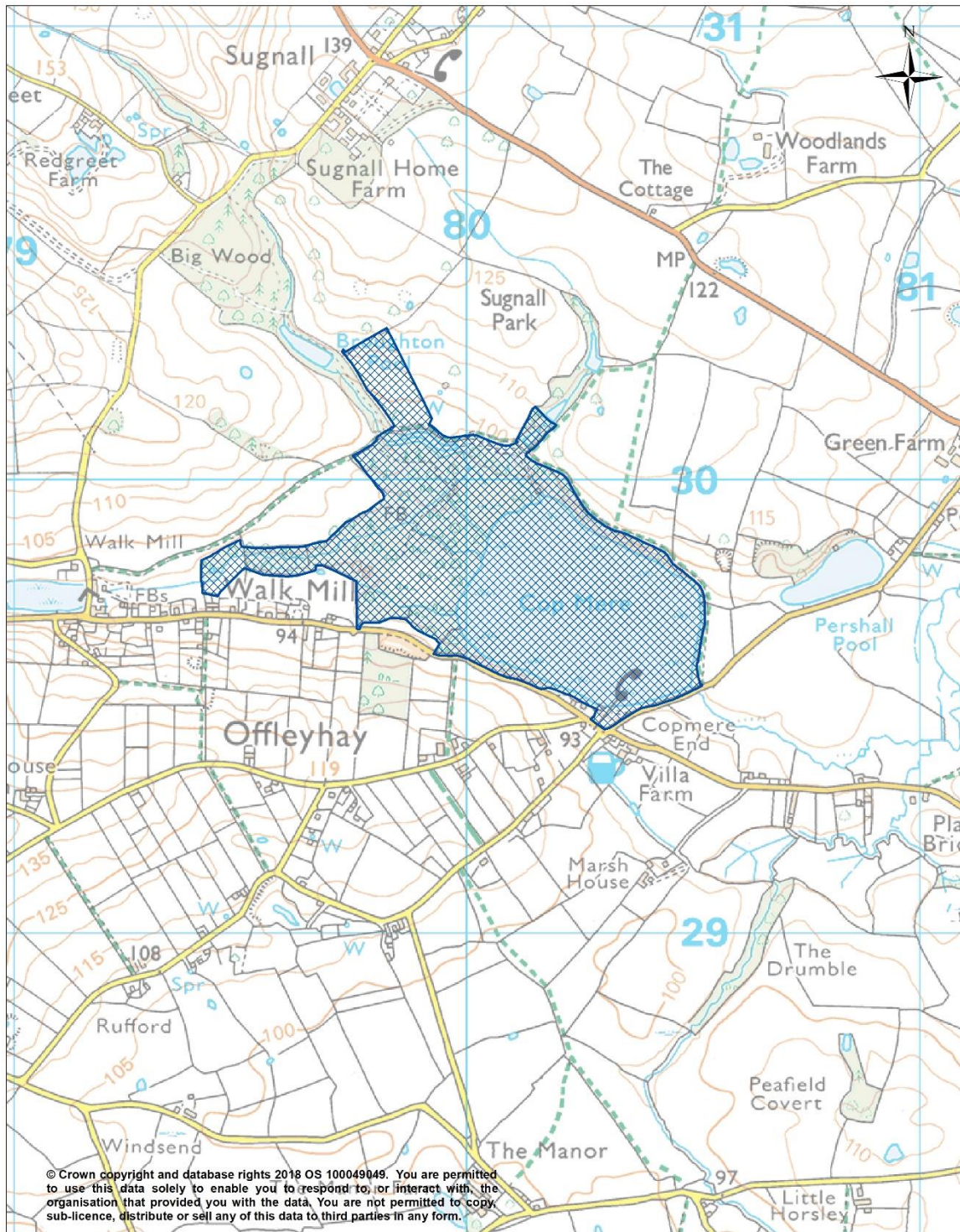
Map 6 Cole Mere Ramsar site



Cole Mere SSSI

Scale : 1:5,000

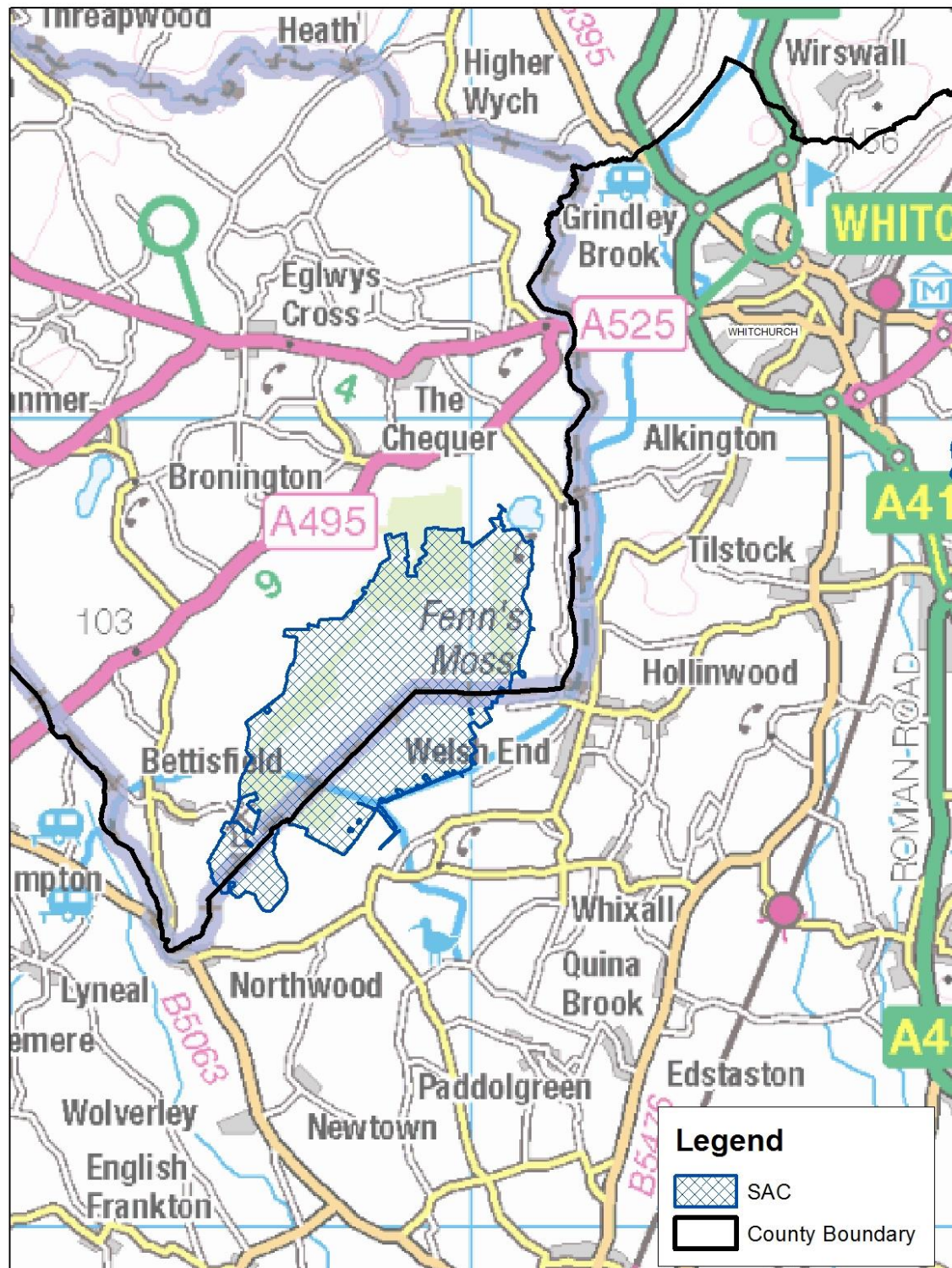
Map 7 Cop Mere Ramsar site



Cop Mere SSSI

Scale : 1:7,500

Map 8 Fenn's, Whixall, Bettisfield and Wem Mosses SAC/Ramsar site



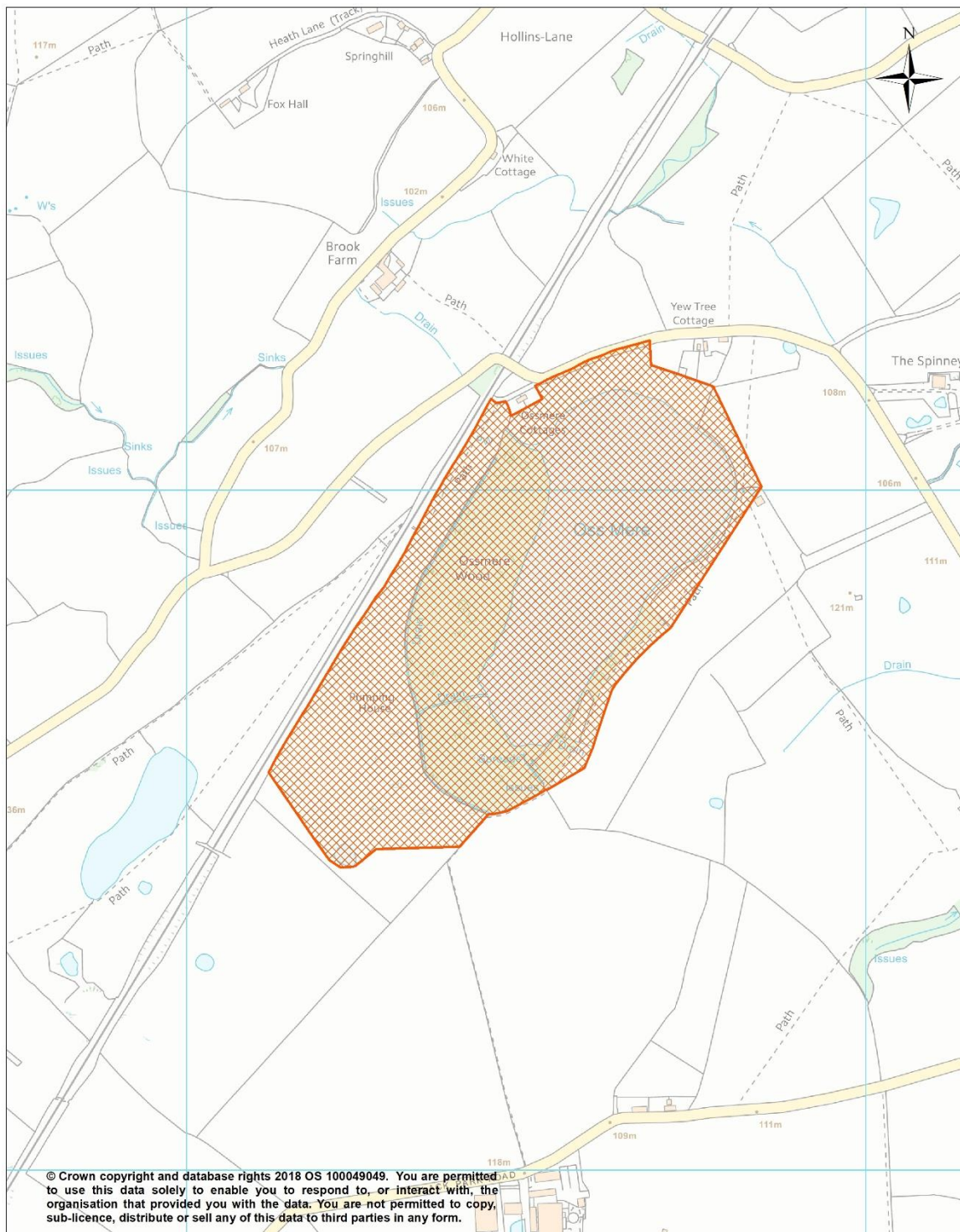
Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC



0 0.5 1 2 Kilometers
+ + + + +

© Crown copyright 2015 OS 100049049

Map 9 – Oss Mere Ramsar site



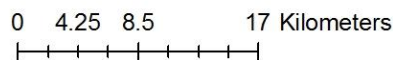
Oss Mere RAMSAR

Scale : 1:5,000

Map 9 River Severn SAC/SPA/Ramsar sites

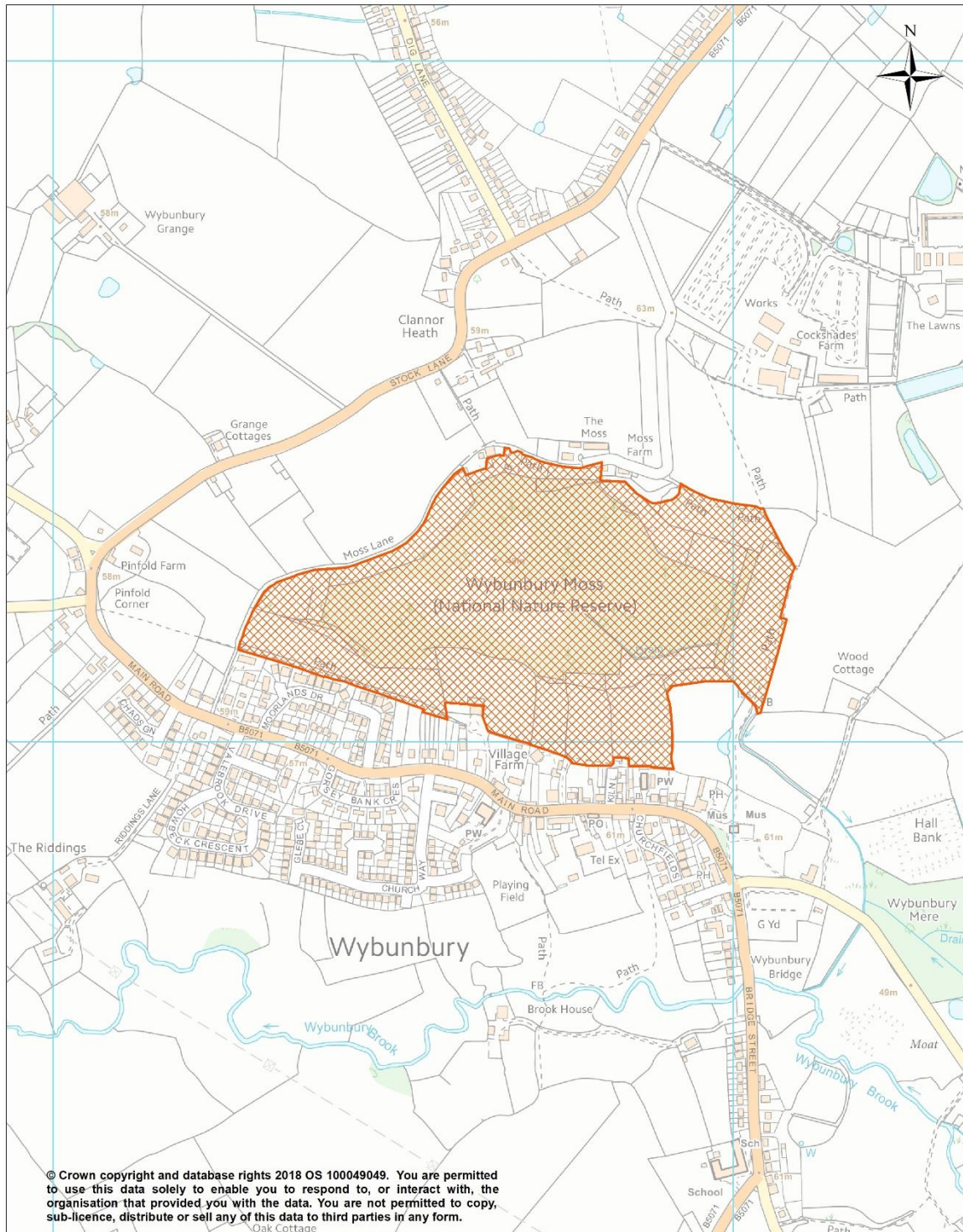


Severn Estuary SPA, SAC & RAMSAR (& River Wye SAC)



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Map 10 Wybunbury Moss, West Midlands Mosses SAC/Ramsar site



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Wybunbury Moss SAC

Scale : 1:5,000

Appendix 2 Description of international sites including conservation objectives and sensitivities

Table 1: Brown Moss SAC

Site Name: Brown Moss SAC, SJ561394, Shropshire, England.
Site Description: <p>Brown Moss (32.02ha) is a series of pools set in heathland and woodland. The pools support Floating water plantain <i>Luronium natans</i> for which the SAC is designated, and vary considerably in their water chemistry and also in their water levels which fluctuate considerably and apparently independently. Floating water plantain appears to behave as a metapopulation on this site, colonising the various pools according to their suitability. The site is of special importance for the marsh, swamp and fen communities associated with the pools which occupy hollows in the sand and gravel substrate.</p>
Conservation Objectives for SAC: <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;</p> <ul style="list-style-type: none">• The extent and distribution of <i>Luronium natans</i>,• The structure and function (including typical species) of the habitat of <i>Luronium natans</i>,• The supporting processes on which the habitat of <i>Luronium natans</i> rely,• The populations of <i>Luronium natans</i>, and,• The distribution of <i>Luronium natans</i> within the site.• <p>Supplementary Advice to support the Conservation Objectives is not currently available.</p>
Definition of Favourable Condition for Brown Moss SSSI: Subject to natural change, to maintain, in favourable condition, the habitat for the internationally important population of Floating Water Plantain (<i>Luronium natans</i>), with particular reference to the standing open water. (Maintenance implies restoration if the feature is not currently in favourable condition).
Site Vulnerability: Colonisation by trees is being addressed but continues to be of concern due to the shading, nutrient and hydrological effects on the open water and heathland.

<p>The presence of <i>Crassula helmsii</i> is a threat to <i>Luronium natans</i> and various control mechanisms are being explored.</p> <p>The site dried out almost completely in summer 2013. The influence of groundwater and direction of flow is thought to be key to the management of the notified feature. Surface drains and ditches also exist, some draining surrounding farmland, others linking the pools. Some of these have become silted up or diverted and need further investigation to determine the quantity and quality of water coming into the site.</p> <p>High phosphorus and nitrogen concentrations in groundwater and surface water feeding the pools is being caused by agricultural run-off, gathering geese, septic tanks and release from sediment. The eutrophication this causes impacts on the suitability of the pools for Floating water plantain.</p> <p>Of the total external and internal sources of phosphorus, sediment was the major contributor. Phosphorus release from sediment contributed up to 84% of the total supply. Birds are a major contributor leading to high phosphorus levels in pools, thereby affecting macrophyte communities. Control of geese has been mooted but the area is open access land and is well used by the local public.</p> <p>Nitrogen deposition exceeds site relevant critical loads.</p>	
Reason for Designation	Environmental Conditions Needed to Support Site Integrity
<p>Annex II Species that is a primary reason for selection of site: Floating Water Plantain <i>Luronium natans</i>.</p>	<p>Sensitive to;</p> <ul style="list-style-type: none"> • Hydrological changes, • Water pollution, • Invasive species, • Siltation, • Air pollution including atmospheric nitrogen deposition, • Shading through tree colonisation, and Changes in grazing regime.

Table 2: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC

<p>Site Name: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC, SJ486364, Shropshire / Wrexham, England / Wales.</p>
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<p>Site Description: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses (949.2ha) together form an outstanding example of lowland raised mire, straddling the English/Welsh border. It is amongst the largest and most southerly raised bogs in the UK. The site as a whole supports a wide range of characteristic acid peat bog vegetation including thirteen species of Sphagnum moss, which represent successional stages in the development of a raised mire.</p>
<p>Conservation Objectives for SAC:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;</p> <ul style="list-style-type: none">• The extent and distribution of qualifying natural habitats• The structure and function (including typical species) of qualifying natural habitats, and• The supporting processes on which qualifying natural habitats rely <p>Supplementary Advice to support the Conservation Objectives is not currently available.</p>
<p>Definition of Favourable Condition for Fenn`s, Whixall, Bettisfield, Wem & Cadney Mosses SSSI: To maintain, in favourable condition, the active raised bogs and degraded raised bogs still capable of natural regeneration on the site.</p>
<p>Site Vulnerability: The lowland raised mire is dependent upon high water levels and a continuation of active peat-forming processes.</p> <p>Much of the site is subject to mineral planning consents for peat extractions which are currently being reviewed. The site has a history of peat-cutting and until recently, part of the site has been subject to large-scale commercial extraction, involving drainage over much of the peat body.</p> <p>Afforestation and agricultural improvement on marginal areas of the peat body have accelerated the lowering of water levels, resulting in encroachment by scrub and a decline in the extent of peat-forming communities.</p> <p>Nutrient enrichment through water in drainage ditches will damage low-nutrient bog habitats.</p> <p>Aerial nitrogen deposition is similarly raising nutrient levels on the bog surface.</p> <p>A greater part of the site is now owned, leased or managed under agreement by conservation organisations. Within these areas, mire rehabilitation management is taking place under the guidance of a management plan.</p>

<p>It is intended to seek to increase the areas under positive conservation management by implementation of the joint Countryside Council for Wales/English Nature acquisition strategy.</p> <p>The Fenn’s and Whixall NNR has an up to date management plan and visitor management strategy.</p>	
Reason for Designation	Environmental Conditions Needed to Support Site Integrity
<p>Annex I Habitats that are a primary reason for selection of site: Active raised bog (priority habitat).</p> <p>Annex I Habitats present as a qualifying feature but not a primary reason for selection of site:</p> <p>Degraded raised bogs still capable of natural regeneration; Degraded raised bog</p>	<p>Maintenance of appropriate (high) water levels.</p> <p>Prevention of nutrient-rich drainage water contaminating the site.</p> <p>Control and amelioration of aerial nitrogen deposition.</p> <p>Prevention of afforestation and removal of scrub/trees on designated habitat.</p> <p>Prevention of peat extraction.</p> <p>Monitoring and control invasive species.</p>

Table 3: West Midlands Mosses SAC – Wybunbury Moss

<p>Site Name: Wybunbury Moss, West Midlands Mosses SAC, SJ842 399, Shropshire, England.</p>
<p>Site Description:</p> <p>West Midlands Mosses (184.18ha) comprise four sites supporting large basin mires which have developed as quaking bogs, known as Schwingmoors, together with a variety of associated hollows and pools showing various types and stages of mire development. This complexity of habitats gives rise to a diverse assemblage of associated plants and invertebrates of national significance.</p> <p>Dystrophic water bodies are very acidic and poor in plant nutrients. Their water has a high humic acid content and is usually stained dark brown through exposure to peat. This habitat is rare in England, and is represented in only 2 SACs. Most examples of this habitat type are small (less than 5 ha in extent), shallow, and contain a limited range of flora and fauna.</p>

The term 'transition mire' relates to vegetation that in terms of its floristic composition and general ecological characteristics is transitional between acid bog and alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich. As a result, the mire vegetation normally has intimate mixtures of species considered to be tolerant of acid conditions and others which flourish in more base-rich conditions.

Conservation Objectives for SAC:

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats,
- The structure and function (including typical species) of qualifying natural habitats, and,
- The supporting processes on which qualifying natural habitats rely.

Draft Supplementary Advice to support the Conservation Objectives is available.

There should be no measurable net reduction (excluding any trivial loss) in the extent and area of the H7140 feature, and in some cases, the full extent of the feature may need to be restored. Addition relevant targets are:

- Restore the total extent of the H7140 feature to 110 hectares, based on the mapped extent of peat and basin dimensions.
- Restore the distribution and configuration of the H7140. feature, including where applicable its component vegetation types, across the site
- Ensure the component vegetation communities of the H7140 feature are referable to and characterised by the following National Vegetation Classification types (including transitions between them ; M1, M2, M3, M4, M5, M9, M18, M22, S2, S3, S24, S27, W2,W4, W5
- Restore the abundance of the species listed below to enable each of them to be a viable component of the H7140 habitat.
- Assemblage of vascular plants;
 - *Calliergon giganteum* (giant sparmoss), *Campylium stellatum* (yellow starry feather moss), *Carex diandra* (lesser tussock-sedge), *Carex lasiocarpa* (slender sedge), *Carex limosa* (bog sedge), *Carex rostrate* (bottle sedge), *Scorpidium (Drepanocladus) revolvens* (rusty hook-moss), *Scorpidium scorpioides* (hooked scorpion-moss), *Rhychospora alba*(white beak-sedge), *Menyanthes trifoliata* (bogbean), *Pedicularis palustris* (marsh lousewort),
 - Assemblage of *Sphagnum* mosses including *Sphagnum papillosum*, *S. angustifolium*, *S. fimbriatum*; *S. riparium* *S. cuspidatum*
 - *Aneura pinguis*

- *Cryptocephalus decemacaulatus* (ten-spotted pot beetle), *Hagenella clathrata* (window winged sedge), *Leucorrhinia dubia* (white-faced darter) and *Vertigo geyeri* (Geyer's whorl snail).
- Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H7140 feature.
- Restore a low cover (<10% of the area) of scrub or trees within stands of H7140.
- At a site, unit and catchment level, restore natural hydrological processes to provide the conditions necessary to sustain the H7140 feature within the site.
- Restore the surface water and groundwater supplies supporting the hydrology of the component sites of the SAC to a natural, low-nutrient status.
- Restore the H7140 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site.
- Restore the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support (directly or indirectly) the H7140 feature.
- Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).
- Maintain or establish the management measures (either within and/or outside the site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the H7140 feature.

Definition of Favourable Condition for Brown Moss SSSI: Achievement of the stated targets above.

Site Vulnerability:

The component sites have been all modified by human activity to a greater or lesser extent, including drainage, peat cutting and nutrient enrichment, generally to the detriment of the natural features.

Site is vulnerable to:

- Drainage resulting in a reduction in the extent and quality of the designated habitat, increasing its susceptibility to scrub invasion and drainage channels providing a pathway for nutrients into the site.
- Invasive or introduced non-native species can be a serious potential threat to the structure and function of these habitats, because they are able to exclude, damage or suppress the growth of their associated typical species, reduce structural diversity of the habitat and prevent the natural regeneration of characteristic site-native species.
- Although some native tree cover forms part of the designated feature, extensive tree or scrub growth is detrimental.
- Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present.

<ul style="list-style-type: none"> • West Midland Mosses is currently subject to nutrient pressures, principally from agriculture, forestry and development, via both water borne and airborne pollution. Site critical loads are currently exceeded, and evidence exists of impacts on bryophytes as a result of this. • The overall vulnerability of this SAC to climate change has been assessed by Natural England as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that these sites are considered to be the most vulnerable sites overall and are likely to require the most adaptation action, most urgently. This means that action to address specific issues is likely, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be required. • Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species. Sympathetic management of the catchments of the component sites is critical to achieving good condition. 	
Reason for Designation	Environmental Conditions Needed to Support Site Integrity
<p>H3160. Natural dystrophic lakes and ponds (Acid peat-stained lakes and ponds)</p> <p>H7140. Transition mires and quaking bogs. (Very wet mires often identified by an unstable `quaking` surface)</p>	<p>Sensitive to;</p> <p>Hydrological changes, Water pollution, Invasive species, Siltation, Air pollution including atmospheric nitrogen deposition, Shading through tree colonisation, and Changes in grazing regime, Surrounding land-use change.</p>

Table 4: Midland Meres and Mosses (Ramsar Phase 1)

<p>Site Name: Midland Meres and Mosses (Ramsar phase 1), Shropshire/ Clwyd/ Cheshire/ Staffordshire, England.</p>
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<p>Site Description: Phase 1 of the Ramsar designation covers 513.25ha and is entirely co-incident with the following 16 Sites of Special Scientific Interest (SSSI). These are Bagmere, Berrington Pool, Betley Mere, Bomere, Shomere & Betton Pools, Brown Moss, Chartley Moss, Clarepool Moss, Fenemere, Flaxmere, Hatchmere, Marton Pool (Chirbury), Quoisley Mere, Tatton Mere, The Mere (Mere), White Mere and Wybunbury Moss SSSI's.</p> <p>NB. Those SSSIs in the Ramsar phase 1 designation indicated in bold above are considered in this screening document.</p> <p>Diverse series of lowland open water and peatland sites supporting habitats such as meres with associated fringing habitats, reed swamp, fen, carr and damp pasture. Peat accumulation has resulted in nutrient poor peat bogs (mosses) forming in some sites on the fringes of the meres or completely infilling basins. These habitats support a wide range of nationally important flora and fauna.</p>	
<p>Conservation Objectives:</p> <p>Ramsar criterion – peatland.</p> <p>The conservation objectives for the site are to maintain in favourable condition:</p> <ul style="list-style-type: none"> • the habitat types for which the site is designated. 	
<p>Site Vulnerability: Invasive species: considered a major impact on this site.</p> <p>Water quality: eutrophication is considered a major impact on this site.</p> <p>Recreational pressure and disturbance: in line with other bog and mire habitats, trampling and erosion are likely to be a significant issue where public access occurs. Water quality: declines in water quality through nutrient enrichment and sediment. Land use in surrounding areas: agricultural practices and urban runoff are likely to affect the scattered sites through nutrient enrichment and sedimentation.</p>	
<p>Reasons for Designation:</p>	<p>Environmental Conditions Needed to Support Site Integrity</p>

<p>Criterion 1a. A particularly good example of a natural or near natural wetland, characteristic of this biogeographical region, The site comprises the full range of habitats from open water to raised bog.</p> <p>Criterion 2a. Supports a number of rare species of plants associated with wetlands. The site contains the nationally scarce six-stamened waterwort <i>Elatine hexandra</i>, needle spike-rush <i>Eleocharis acicularis</i>, cowbane <i>Cicuta virosa</i>, marsh fern <i>Thelypteris palustris</i> and elongated sedge <i>Carex elongata</i>.</p> <p>Criterion 2a. Contains an assemblage of invertebrates, including the following rare wetland species. 3 species considered to be endangered in Britain, the caddis fly <i>Hagenella clathrata</i>, the fly <i>Limnophila fasciata</i> and the spider <i>Cararita limnaea</i>. Other wetland Red Data Book species are; the beetles <i>Lathrobium rufipenne</i> and <i>Donacia aquatica</i>, the flies <i>Prionocera pubescens</i> and <i>Gonomyia abbreviata</i> and the spider <i>Sitticus floricola</i>.</p>	<p>Environmental Conditions needed to support site integrity will need to be considered at the full Habitats Regulations stage since this range of sites is varied and needs consideration in relation to specific plans and policies.</p>
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Table 5: Midland Meres and Mosses (Ramsar Phase 2)

<p>Site Name: Midland Meres and Mosses (Ramsar phase 2), Shropshire/ Clwyd/ Cheshire/ Staffordshire, England.</p>
<p>Site Description: Phase 2 of the Ramsar sites covers 1740.3ha and is entirely co-incident with the following 19 Sites of Special Scientific Interest (SSSI). These are: Abbots Moss, Aqualate Mere, Black Firs & Cranberry Bog, Brownheath Moss, Chapel Mere, Cole Mere, Cop Mere, Fenn’s, Whixall, Bettisfield, Wem & Cadney Mosses, Hanmer Mere, Hencott Pool, Linmer Moss, Llyn Bedydd, Morton Pool & Pasture, Oak Mere, Oakhanger Moss, Oss Mere, Rostherne Mere, Sweat Mere & Crose Mere and Vicarage Moss.</p>

<p>NB. Those SSSIs in the Ramsar phase 2 designation indicated in bold above are considered in this screening document.</p>	
<p>Conservation Objectives:</p> <p>Ramsar criterion – peatland.</p> <p>The conservation objectives for the site are to maintain in favourable condition:</p> <ul style="list-style-type: none"> • the habitat types for which the site is designated. 	
<p>Site Vulnerability: Invasive species: considered a major impact on this site. Water quality: eutrophication is considered a major impact on this site. Land take for development · Recreational pressure and disturbance: in line with other bog and mire habitats, trampling and erosion are likely to be a significant issue where public access occurs. Water quality: declines in water quality through nutrient enrichment and sediment. Land use in surrounding areas: agricultural practices and urban runoff are likely to affect the scattered sites through nutrient enrichment and sedimentation.</p>	
<p>Reason for Designation:</p>	<p>Environmental Conditions Needed to Support Site Integrity</p>
<p>Criterion 1a. A particularly good example of a natural or near natural wetland, characteristic of this biogeographical region, The site comprises the full range of habitats from open water to raised bog.</p> <p>Criterion 2a. Supports a number of rare plants associated with wetlands, including the nationally scarce cowbane <i>Cicuta virosa</i>, elongated sedge <i>Carex elongate</i> and bog rosemary <i>Andromeda polifolia</i>. Also present are the nationally scarce bryophytes <i>Dicranum undulatum</i>, <i>Dicranum affine</i> and <i>Sphagnum pulchrum</i>.</p>	<p>Environmental Conditions needed to support site integrity will need to be considered at the full Habitats Regulations Assessment stage since this range of sites is varied and needs consideration in relation to specific plans and policies.</p>

<p>Criterion 2a. Containing an assemblage of invertebrates, including several rare wetland species. There are 16 species of Red Data Book insect listed for the site including the following endangered species: the moth <i>Glyphipteryx lathamella</i>, the caddisfly <i>Hagenella clathrata</i> and the sawfly <i>Trichiosoma vitellinae</i>.</p>	
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Table 6: Midland Meres & Mosses Ramsar Phases 1 and Phase 2 – individual sites and features

Ramsar phases split into Ramsar features/SSSI unit from Information on Natura 2000 Sites in the West Midlands, Prepared for Natural England by Treweek Environmental Consultants, 2009.

Phase 1 Sites/Ramsar feature	Open water	Swamp	Fen	Basin Mire	Raised bog	Wet pasture	Carr	Invertebrates	Plants
Clarepool Moss	+			+				dotted footman	
Wybunbury Moss				+		+	+	assemblage <i>Carorita limnaea</i>	<i>Andromeda polifolia</i> <i>Thelypteris palustris</i>
Brown Moss	+	+	+	+					<i>Luronium natans</i>
Berrington Pool	+	+	+						
Betley Mere	+	+	+			+	+		
Bomere, & Shomere Pools	+	+		+			+		<i>Elatine hexandra</i> <i>Thelypteris palustris</i>
Fenemere	+	+	+			+	+		<i>Cicuta virosa</i> <i>Thelypteris palustris</i>
Marton Pool	+	+					+		
Quoisley Meres	+	+	+			+	+		<i>Cicuta virosa</i> <i>Thelypteris palustris</i>
White Mere	+						+		<i>Carex elongata</i> <i>Eleocharis acicularis</i>

Phase 2 Sites/Ramsar feature	Open water	Swamp	Fen	Basin Mire	Raised bog	Wet pasture	Carr	Invertebrates	Plants
Fenns and Whixall Moss					+		+	assemblage <i>Hagenella</i> small pearl-	<i>Andromeda polifolia</i> <i>Dicranum undulatum</i> <i>Sphagnum pulchrum</i>
Aqualate Mere	+	+	+			+	+	assemblage	
Black Firs & Cranberry Bog	+			+			+		<i>Cicuta virosa</i>
Brownheath Moss			+				+		<i>Carex elongata</i>
Chapel Mere	+	+					+		
Cole Mere	+					+	+		<i>Carex elongata</i>
Cop Mere	+	+	+				+		
Hencott Pool							+		<i>Carex elongata</i> <i>Cicuta virosa</i>
Limmer Moss				+					<i>Thelypteris palustris</i>
Morton Pool & Pasture	+	+				+	+		<i>Thelypteris palustris</i>
Oss Mere	+	+				+	+		<i>Cicuta virosa</i> <i>Thelypteris palustris</i>
Sweat Mere & Crose Mere	+	+	+			+	+		<i>Carex elongata</i> <i>Thelypteris palustris</i>

Natural England is in the process of revising conservation objectives for SSSI units in Shropshire in order to take secondary European Features such as species into account. The tables below include Conservation Objectives where they have been provided by Natural England. The most up to date Conservation objectives for the SSSI units will be sought from Natural England prior to carrying out a full Appropriate Assessment on any lower tier document.

Table 7: Ramsar Midland Meres & Mosses Phase 1 individual site descriptions

Site Name: Betley Mere SSSI, SJ 747482, Staffordshire, England
Site Description: Betley Mere (37.5ha) is one of the few natural standing waters in Staffordshire. It occupies a shallow valley in glacial deposits overlying Triassic strata and is bounded on three sides by extensive peat deposits on which a wide range of vegetation types have developed. The zonation from open water with floating-leaved aquatic plants through emergent reedswamp, fen and carr to mature fen woodland is as complete an example of a wetland hydrosere as occurs in the county. Betley is highly rated among the meres for the diversity of plant communities, the variety of higher plant species and the large areas of reedswamp, alderwillow woodland and species-rich tall fen.

The last community and an acidic marshy grassland type found in the wettest parts of the adjoining pastures, are now of very restricted distribution in Staffordshire.

Betley Mere is shallow and eutrophic (nutrient rich) with a sparse submerged aquatic vegetation mostly of Canadian waterweed *Elodea canadensis* but including the nationally rare autumnal water-starwort *Callitriche hermaphroditica* and regionally scarce blunt-fruited water-starwort *C. obtusangula*. Other species of note include grey club-rush *Schoenoplectus lacustris* subsp *tabernaemontani* – a county rarity and the regionally uncommon blunt-flowered rush *Juncus subnodulosus*. A nationally uncommon type of wet alder-willow woodland abuts the northern and western sides of Betley Mere and surrounds most of the former Little Mere. The pastures north of Betley Mere occupy the site of a former raised bog and comprise a range of semi-natural grassland types reflecting differences in peat nutrient status, drainage and management treatments. The least agriculturally improved parts have pockets of dry acidic grassland and larger areas of acidic marshy grassland. These are rich in sedges, such as brown sedge *Carex disticha*, star sedge *C. echinata* and carnation sedge *C. panicea*; other noteworthy species include marsh pennywort *Hydrocotyle vulgaris*, bog pimpernel *Anagallis tenella* and bristle club-rush *Isolepis setacea*. The water courses and field ditches provide additional habitats for aquatic plants and animals such as water vole *Arvicola terrestris* and the freshwater mussel *Anodonta cygnea*.

The site attracts many birds throughout the year and more than 50 species breed including little and great crested grebes *Tachybaptus ruficollis* and *Podiceps cristatus*, grey wagtail *Motacilla cinerea* and seven species of warbler. There is a representative and diverse aquatic invertebrate fauna associated with Betley Mere including the rare water flea *Daphnia magna*.

Definition of Favourable Condition for SSSI: Currently c.62% of the SSSI is classed as 'Unfavourable – No change and 38% Unfavourable – Recovering. No definition of Favourable Condition available.

Site Vulnerability: Vulnerable to application of manure, fertilizers, lime, pesticides and herbicides, dumping of materials or damage/destruction of vegetation or wild animals, drainage, changing water levels, modification of the structure of water courses or wetland features, recreational activities or game and wildfowl management (see full list of damaging operations).

Site Name: Brown Moss SSSI, SJ562395, Shropshire, England also SAC

<p>Site Description: Brown Moss (31.32ha) differs from the other North Shropshire Mosses in consisting of a series of pools set in an area of heathland and woodland, rather than an expanse of peat. It has been suggested that the site may once have been peat covered, and that peat removal in the past has led to the present condition of the site.</p>
<p>Definition of Favourable Condition for SSSI: Subject to natural change, to maintain, in favourable condition, the habitat for the internationally important population of Floating Water Plantain (<i>Luronium natans</i>), with particular reference to the standing open water. (Maintenance implies restoration if the feature is not currently in favourable condition).</p>
<p>Site Vulnerability: Colonisation by trees is being addressed but continues to be of concern due to the shading, nutrient and hydrological effects on the open water and heathland.</p> <p>The presence of <i>Crassula helmsii</i> is a threat to <i>Luronium natans</i> and various control mechanisms are being explored.</p>

<p>Site Name: Wybunbury Moss SSSI, SJ 697502, Cheshire, England</p>
<p>Site Description: Wybunbury Moss (23.3 ha)</p> <p>Wybunbury Moss is a nationally important site as it is one of the finest examples in the country of a 'schwingmoor' and supports an outstanding assemblage of invertebrates including many nationally and locally rare species. Current evidence suggests that the origin of the lake basin containing the 'schwingmoor' was a secondary process associated with the solution and subsidence of the underlying salt bearing</p>

<p>strata. This is a very rare occurrence and can be seen at only one other British site. The central floating raft is surrounded by fen and mixed woodland.</p> <p>Where the floating raft is wettest tree growth is inhibited and an open ‘sphagnum lawn’ occurs dominated by <i>Sphagnum recurvum</i>. Other bryophytes are also abundant as well as plants such as cotton-grass <i>Eriophorum angustifolium</i>, cranberry <i>Vaccinium oxycoccus</i> and cross-leaved heath <i>Erica tetralix</i>. Other notable species include round-leaved sundew <i>Drosera rotundifolia</i>, bog rosemary <i>Andromeda polifolia</i> and bog asphodel <i>Narthecium ossifragum</i> all of which are rare in Cheshire. A small pool in one area contains various sedges including the regionally rare <i>Carex limosa</i>. Towards the edge of the open lawn where the water table is lower there is a transition from scattered and stunted Scots pine <i>Pinus sylvestris</i> and downy birch <i>Betula pubescens</i> to taller and denser mixed woodland. Areas of fen woodland occur with a diverse groundflora. Notable species include marsh fern <i>Thelypteris palustris</i> and saw sedge <i>Cladium mariscus</i> both of which are rare in Cheshire.</p> <p>The range of habitats present at Wybunbury Moss support many invertebrate species including 47 species of spider of which 5 are nationally rare and one, <i>Carorita limnaea</i> is only known from this site. Three hundred and seven species of moth and butterfly have been recorded of which the Manchester treble bar <i>Carsia sororiata</i> ssp. <i>anglica</i> and the scallop shell <i>Rheumoptera undulata</i> are very rare in Cheshire. Several rare caddis-flies and beetles have also been found as well as the rare white-faced dragonfly <i>Leucorrhinia dubia</i>.</p>
<p>Definition of Favourable Condition for SSSI: Currently c.37% of the SSSI is classed as ‘Favourable’ and 63% Unfavourable – Recovering. No definition of Favourable Condition available.</p>
<p>Site Vulnerability: Vulnerable to cultivation, grazing, application of manure, fertilizers, lime, pesticides and herbicides, changes in tree/woodland management, dumping of materials or damage/destruction of vegetation or wild animals, drainage, changing water levels, modification of the structure of water courses or wetland features, recreational activities or game and wildfowl management (see full list of damaging operations).</p>

Table 8: Ramsar Midland Meres & Mosses Phase 2 individual site descriptions

<p>Site Name: Aqualate Mere SSSI, SJ770205, Staffordshire</p>

Site Description: Aqualate Mere (241.00ha) is the largest of the meres with the most extensive reedswamp community. The mere and its surrounds form a complex of open water, fen, grassland and woodland unrivalled in Staffordshire for the variety of natural features of special scientific interest. The esker formation on the north side of the mere is of national geomorphological importance in its own right. The large area and juxtaposition of seminatural habitats supports an outstanding assemblage of beetles, moths and sawflies. The site has nationally important numbers of breeding herons *Ardea cinerea* and passage shoveler *Anas clypeata* and is regionally significant for breeding waders.

Definition of Favourable Condition for SSSI:

Site Vulnerability:

Reductions in water levels from ground water and surface water abstractions, eutrophication from raised nitrogen and phosphorous and siltation entering the site via incoming water, largely from the nearby canal, as well as the presence of invasive species, in particular fish.

Site Name: Cole Mere SSSI, SJ433332, Shropshire

Site Description: Cole Mere (48.2 ha) is one of the largest of the Shropshire meres, with an almost complete fringe of woodland. There is a comparatively rich flora of aquatic macrophytes, including small pondweed *Potamogeton berchtoldii*, fan-leaved water crowfoot *Ranunculus circinatus* and autumnal water-starwort *Callitriche hermaphroditica*. Lesser yellow water-lily *Nuphar pumila* occurs here at what is probably its only English locality – the main centre of distribution of this species is the Scottish Highlands.

Most of the surrounding woodland is of artificial origin but is included in the site since it is of value as a habitat for birds and adds to the diversity of the site. However, near the eastern end there is an area of semi-natural alder carr in which greater spearwort *Ranunculus lingua* and the rare elongated sedge *Carex elongata* occur.

At the south-eastern end of the site there is an area of damp, rush-dominated pasture, with characteristic species such as lesser spearwort *Ranunculus flammula* and carnation sedge *Carex panicea*. The aquatic invertebrate fauna of Cole Mere is particularly diverse.

Definition of Favourable Condition for SSSI:

Site Vulnerability: Vulnerable to cultivation, grazing, application of manure, fertilizers, lime, pesticides and herbicides, changes in tree/woodland management, dumping of materials or damage/destruction of vegetation or wild animals, drainage, changing water levels, modification of the structure of water courses or wetland features, recreational activities or game and wildfowl management (see full list of damaging operations).

Site Name: Cop Mere SSSI, SJ802297, Staffordshire

Site Description: Cop Mere (37.8ha) is a shallow lake lying in a hollow in Keuper Marl. In many respects, it is an outlier of the series of meres concentrated in North Shropshire and Cheshire. However, it differs from many of the meres in having a distinct inflow and outflow, the River Sow, which enters the mere at the western end and leaves at the eastern end.

Definition of Favourable Condition for SSSI:

Site Vulnerability: Reductions in water levels (possibly from long-term increased abstraction rates from the River Sow), eutrophication and siltation from surrounding agricultural run-off and invasive species, especially encroaching rhododendron scrub.

Site Name: Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SSSI, SJ490365, Shropshire/Clwyd, England/Wales also SAC

Site Description: Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses (948.4ha) together form an outstanding example of a lowland raised mire. The moss complex, which straddles the border between Shropshire, England and Clwyd, Wales, is one of the largest and most southerly raised mires in Britain. The site is highly valued ecologically as an example of mire development occurring under relatively warm and dry conditions and lying at the edge of the British range for this type of habitat.

Definition of Favourable Condition for SSSI: To maintain, in favourable condition, the active raised bogs and degraded raised bogs still capable of natural regeneration on the site.

Site Vulnerability: The lowland raised mire is dependent upon high water levels and a continuation of active peat-forming processes.

Much of the site is subject to mineral planning consents for peat extractions which are currently being reviewed. The site has a history of peat-cutting and until recently, part of the site has been subject to large-scale commercial extraction, involving drainage over much of the peat body. Afforestation and agricultural improvement on marginal areas of the peat body have accelerated the lowering of water levels, resulting in encroachment by scrub and a decline in the extent of peat-forming communities.

A greater part of the site is now owned, leased or managed under agreement by conservation organisations. Within these areas, mire rehabilitation management is taking place under the guidance of a management plan.

It is intended to seek to increase the areas under positive conservation management by implementation of the joint Countryside Council for Wales/English Nature acquisition strategy.

Appendix 3: Screening of MDNDP policies for potential significant effects

See separate Pdf.